THE JOURNAL

OF THE

Department of Agriculture

OF SOUTH AUSTRALIA.

No. 6. JANUARY 15, 1923. VOL. XXVI.

Published Monthly by the Department of Agriculture.
Edited by H. J. FINNIS.

CONTENTS.

	PAGE.
POINTS FOR PRODUCERS	498-503
INQUIRY DEPARTMENT	504-507
DEPARTMENTAL DOINGS	507
REPORT ON SECOND YEAR OF OPERATIONS OF RIVER MURRAY HERD TESTING ASSOCIATION	508-523
MAITLAND BRANCH OF THE AGRICULTURAL BUREAU—FIRST ANNUAL CROP COMPETITION, 1922	523-535
NARACOORTE AND KYBYBOLITE BRANCHES OF THE AGRICULTURAL BUREAU—SEVENTH ANNUAL FARM COMPETITIONS	536-549
POINTS FROM THE CHAFF AND HAY ACT, 1922	550-552
ORCHARD NOTES FOR SOUTHERN DISTRICTS	552
RIVER MURRAY HERD TESTING ASSOCIATION	553
MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION	554
ADVISORY BOARD OF AGRICULTURE	556-558
THE AGRICULTURAL OUTLOOK	559
DAIRY AND FARM PRODUCE MARKETS	560
RAINFALL	561-562
AGRICULTURAL BUREAU REPORTS	563-596

All communications to be addressed:
"The Editor, Journal of Agriculture, Victoria Square, Adelaide."

Any person may reproduce or republish any of the articles contained herein, provided that an acknowledgment is made that the article appeared in the *Journal of Agriculture* and the author's name is also acknowledged.

G. F. JENKINS,
Minister of Agriculture.

POINTS FOR PRODUCERS.

Drainage Operations at Berri Orchard.

The Director of Agriculture (Professor Arthur J Perkins) visited Berri on Tuesday, December 5th, and addressed a meeting of Upper River Branches of the Agricultural Bureau on the subject, "Drainage," illustrating his remarks from the operations being undertaken on the Government Experimental Orchard, Berri. This orchard developed a salt patch from the first days of irrigation, and at the present moment from 5 to 6 acres are quite barren, whilst the salt shows signs of gradually invading neighboring areas. The first step towards reclamation consisted of drawing up contour maps of the affected area showing the levels both of the surface and of the impermeable clay subsoil. As was anticipated, the clay contours did not in any way conform to those of the surface, with the result that the water was held up on a hill slope presenting a mean surface fall of 2ft. 6in. to the chain. This rather exaggerated fall has rendered necessary the use of a relatively large number of observation pits, with which the fall is broken so as to reduce the velocity of the drainage waters, and thus avoid erosion. In laying out the drainage scheme everything has been done to avoid a check in the velocity of the water and thus minimise the deposit of silt in the pipes. It has been recognised, too, that, in the orchard, underground pipes are always liable to be choked by the roots of trees, and, unless special precautions are taken, there is frequently difficulty in locating the affected pipes, or even of knowing whether certain lines of pipes are working or not. This difficulty has been overcome by making the subsidiary drains, which meet the main drain at an acute angle, discharge into observation pits. The subsidiary drains, where sufficiently long, have also been provided with observation pits of their own. This has raised the cost of drainage somewhat, although not excessively so in view of the advantages that accrue. It is estimated that one of these observation pits costs, approximately, £2.

Following on the lecture, members of the Agricultural Bureau visited the orchard and were able to see the work in progress. The Manager (Mr. C. G. Savage) is much to be congratulated on the very efficient fashion in which it is being carried out. The first section of the main drain, consisting of 6in. pipes, has been laid, and about one-third of the second section. Two subsidiary drains have been completed, and it is hoped that the complete system will be in working order early in the new year. The drainage waters from irrigations are already passing into the pipes, and it is hoped that when the scheme is complete the salt will gradually be leached out of the land, when it will be brought again under fruit trees. It is estimated that the cost of drainage will be in the neighborhood of £34 to the acre. It must borne in mind, however, that this scheme, besides reclaiming at present barren areas, will present the advantage of protecting areas which otherwise would soon be destroyed by salt.

Experimental Plots at Smoky Bay.

An opinion has prevailed in the Smoky Bay district to the effect that he application of superphosphate to wheat crops did not result in hose increases of yields common to most parts of the State. Analyses f the soils showed that there was present a greater percentage of hosphoric acid than existed in the majority of South Australian oils, and this lent color to the local belief. In order to arrive at efinite data on the question, and at the request of the local Branch f the Agricultural Bureau, the Department of Agriculture laid out series of quantative manurial plots on the holding of Mr. E. Lovelock. This year's crops have now been harvested and the results are as ollows:—

Manurial Dressing.	Yield. Bush.	Yield. Lbs.
No manure	15	4
½cwt. super	18	55
1cwt. super	19	52
2cwt. super	20	48
½cwt. muriate of potash	14	35
1cwt. super and ½cwt. muriate of potash	18	39
1cwt. super and ½cwt. muriate of potash	20	39

The season's results show a marked increase in yield as a result of he application of superphosphates. In common with the experience f most other districts of the State, a small dressing (½cwt. to the acre) ave the most outstanding increase over the return secured from a lot which received no manurial dressing. At the same time increases ere secured from all applications up to and including 2cwt. per acre. he potash content of these soils was shown by analysis to be comaratively low, but applications of potassic manures had rather a epressing effect on the yield, both where the potash was supplied lone or in mixture with superphosphate.

---

odder Crops at Coonalpyn.

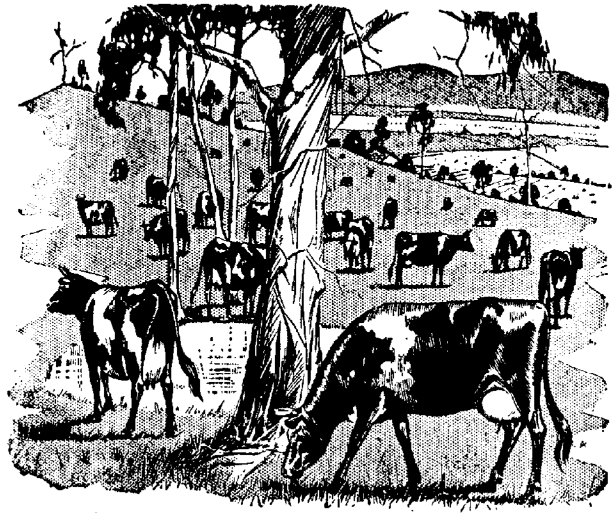
The cereal yields secured in the Coonalpyn district generally have ot been as high as might have been expected from the climatic conitions prevailing. This circumstance has led the Department of griculture to the conclusion that landholders of this and similar istricts may eventually find it more profitable to concentrate attention n livestock production rather than on cereal growing. A series of xperimental plots was established by the Department of Agriculture n the holding of Mr. F. Tregenza three years ago. Their object is o test different fodder plants. A recent inspection of these plots has evealed that of the fodders sown Wimmera rye grass, wallaby grass a native), cockfoot, lucerne, trefoil, and perennial rye grass have one particularly well. Alsike clover, Yorkshire fog grass, and paspalum are also promising.

Soursops and Bindweed.

Two weeds, which are frequently met with in the orchard or vineyard, are the soursop and the pink-flowered convolvulus or bindweed. The former is frequently looked upon with favor by orchardists and vinegrowers, particularly where it is growing in soils which tend to become consolidated during the summer months. The plant is a winter grower, and, in consequence, where the rainfall is good the trees or vines do not suffer from its competition. However, it has yet to be determined whether the acid property of the plant has not a tendency to increase the acidity of the soil. The bindweed is a most undesirable one. It is an evergreen plant, and appears to delight in a well tilled soil. The more it is disturbed with the cultivator or harrows the better it seems to thrive and distribute itself. The destruction of the plant by means of weed killers containing arsenic and the like substances is not recommended in the proximity of vines or trees. The plant has appeared in one or two of the Government Experimental Orchards, and the means of eradication adopted was to hoe it whenever shoots appeared through the soil, thus preventing any functional activities on the part of the plant. When this method of attack was carried on for two years the result was the complete eradication of the pest. The treatment is based on the fact that no plant with chlorophyll in its tissue is able to maintain its vitality for any length of time if prevented from projecting its branches and foliage into light and air. The same treatment can be applied to the soursop.

Broadcasting Forest Trees at Booborowie.

Just over two years ago the Department of Agriculture commenced some tests at the Booborowie Experimental Farm with the idea of trying the effect of directly seeding forest trees to the land for the purpose of providing breakwinds for stock. The particular area represented by this farm is very exposed and subject to strong bleak winds, and for at least 40 years there has been a total absence of growth of trees in the range of hills in this portion of the North. The Departmental tests consisted of sowing broadcast seeds of 12 varieties of eucalypts and three varieties of causarina in the early spring of 1920. The seed of most of these varieties germinated fairly well. The most outstanding growth has been made by the sugar gums, many of which, although as yet under three years old, are from 12ft. to 14ft. in height. The others that have done well are the South Australian box (*E. Hemaphloia*), South Australian blue gum (*E. Leucoxylon*), bastard mahogany (*E. Botryoides*), and South Australian peppermint (*E. Odorata*). The efforts of the Department to provide shelter in this manner have been attended with success. By way of comparison, some gums were transplanted during the same season into the same field as those in which the trees were grown from seed broadcasted *in situ*. The latter have made at least twice the growth that has been made by the transplanted trees. During the season just closed the test has been extended by the inclusion of pines. About nine acres have been sown to four varieties.



NEW ZEALANDIA MILKING MACHINES.

THE NEW ZEALANDIA MILKING MACHINE is natural in its action and effect. Attached to all four teats, it milks alternately two at a time. As in hand milking its pulsation-produce a steady flow of milk, but being mechanical, its action is more regular than the most expert hand milking. It is simple to attach and work the machine, cleaning it is an easy matter, and the whole process is more profitable than the older method. The NEW ZEALANDIA is a paying investment for the owner of 5 or 500 cows. Like the hand, its rubber-lined teat cup adjusts itself to the teats of all cows.

THE INTERNATIONAL LINE OF DAIRY FARM MACHINES also includes other essential machines, such as CREAM SEPARATORS and KEROSENE ENGINES. See the I.H.C. Agent about your dairy equipment when next in Town, or write us direct for literature.

International Harvester Company of Australia, Pty., Ltd.,

113, 114, North Terrace, Adelaide.

Agents Everywhere.

Herd Testing in England.

Figures published in the *Journal of Ministry of Agriculture* of England for September, 1922, show the remarkable development of interest in herd testing in England. In 1917-18 there were in that country 27 societies, representing 19,793 cows with a mean yield of 426galls. of milk. In 1920-21 there were 52 societies, representing 97,903 cows with a mean yield of 495galls. of milk. The largest body of this nature in England is the Essex Herd Testing Society, and its growth during the four-year period from 1917 till 1921 is somewhat extraordinary. It started in 1917-18 with 640 cows yielding an average of 534galls. of milk. The latest figures available, which are for the year 1920-21, show that it now represents 6,427 cows with an average yield of 555galls. of milk.

Plums for Export.

The success which attended the shipment to London last year of many of the more extensively grown varieties of plums, and the excellent prices received, will, no doubt, cause growers to watch with interest the possibilities of shipment during the coming season. It is understood that experimental chambers, similar to those which were used last year, will again be available in the Commonwealth boats. Amongst the well-known varieties that sold for exceptionally good prices were—Coe's Goldendrop, Giant Prune, Monarch, Grand Duke, President, Diamond, and Fellemberg amongst the European sorts, and October Purple, Kelsey, Satsuma, Shipper, Burbank, and Wickson amongst the Japanese Hybrids. The size of the individual fruits is of importance, and, therefore, the Horticultural Branch of the Department of Agriculture suggests that it would be worth while growers, who contemplate shipping, paying some attention to thinning where necessary. If some of the fruit is removed from branches that are at all crowded the remainder will develop to a finer shape, larger size, and better color. Of the above named varieties the fruits that carried best were those which were packed in shallow trays with each individual fruit wrapped in tissue paper before the layers were embodied in woodwool. Up to as high as 60s. was received for a crate containing three small trays holding about 500 fruits. Ordinary apple wrapping paper cut in two pieces makes satisfactory wrappers for plums.

Sheep and Wool Instruction for Farmers.

For some time the Department of Agriculture has been under the disadvantage of being unable to meet the requirements of farmers for instruction in woolclassing. In future, however, the services of an officer will be available to deliver lectures and demonstrations on this subject before Branches of the Agricultural Bureau and other bodies in country centres. An assistant has been appointed to the Wool Instructor of the School of Mines, who will now devote portion of his time to visiting the country centres, addressing meetings, and providing instruction generally.

Herd Testing Society for Metropolitan Area.

Dairymen in the metropolitan area are interesting themselves in the formation of a Herd Testing Society under the Government scheme for subsidising such associations. At the request of several interested parties, the Dairy Branch of the Department of Agriculture is canvassing dairymen in the city and suburbs, and already a number have intimated their willingness to submit their cows to test. It is proposed to hold a meeting early in the new year for the purpose of discussing the project.

Fodders in the Hundred of Senior.

The Department of Agriculture has had under observation since 1919 a series of plots of 14 fodders on the holding of Mr. F. Satchell, in the hundred of Senior, to the north of Bordertown. Of the fodders tried, two that are outstanding are subterranean clover and creeping bent grass, both of which have made a dense mass of growth, and are spreading into the adjoining plots. Subterranean clover is now fairly well known in this State, but creeping bent grass is new to the majority of South Australian farmers. It is used in European countries in grass mixtures principally for soils that are over wet and inclined to be sour. Other fodders that are worthy of notice include alsike clover (which is also doing particularly well in the Kybybolite district), trefoil or black medic, and Wimmera rye grass. Wallaby grass (a native), although somewhat thin, is making good growth.

The Apple Crop.

It is anticipated that the forthcoming apple crop will be one of the lightest on record taking the State generally. Despite this, there are indications that some varieties of trees are carrying a larger quantity of fruit than was anticipated a month or so ago. This applies particularly to the Cleopatra. In some districts, more especially to the north of Adelaide, this is the principal variety grown. It usually happens that seasons of short crops are seasons of better prices; it behoves growers, therefore, to take every care of the fruit. The Horticultural Branch of the Department of Agriculture suggest that orchardists would do well to take every possible precaution against the attacks of codlin moth and black spot. Details of treatment for each of these pests are available in bulletins issued by the Department of Agriculture and procurable on application.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by C. A. LOXTON, B.V.Sc., Government Veterinary Surgeon.]

"A. D. S.," Poochera, has eight-year old mare refuses to eat, has fallen away in condition.

Reply—You should give her one level teaspoonful of powdered nux vomica. Mix this with a little treacle and give on tongue once daily. Give her also plenty of laxative food and an occasional dose of laxative medicine, for which purpose honey will be suitable.

"L. F. G.," Paruna, has mare, seven years, with trembling of muscles behind the shoulder.

Reply—The trembling of the muscles is probably due to fatigue, as she shows this peculiarity after strenuous work. You will recognise the difference between condition (fitness for work) and fatness. If she is at all fat she would become easily fatigued, and trembling of the muscles is commonly seen under these circumstances. I would suggest light and regular work until she is in good working condition.

"A. R.," Mundalla, has (1) pony mare with numerous sores on the body, and (2) draught mare badly affected with scours.

Reply—(1) Try the daily application of the following preparation:—Goulard's extract, 1oz.; olive oil, 6ozs.; mix. (2) Diarrhoea is a symptom of some intestinal irritation and may be treated by giving chlorodyne in doses of 1oz. to 2oz. in a little lukewarm water. Rug and put in a comfortable loosebox. Restrict water and take chill off it. Diet carefully. Do not give green stuff. Allow linseed tea or other demulcent drinks *ad lib* if thirst is a prominent condition.

"A. E. A.," Stansbury, has cow with blood in the milk.

Reply—The presence of blood in the milk is most frequently due to the rupture of a blood-vessel from an injury of some kind, or it may be due to congestion or inflammation of the udder. If there is any heat or pain apply warm foments. dry, and rub gently with camphorated oil. Milk carefully and thoroughly.

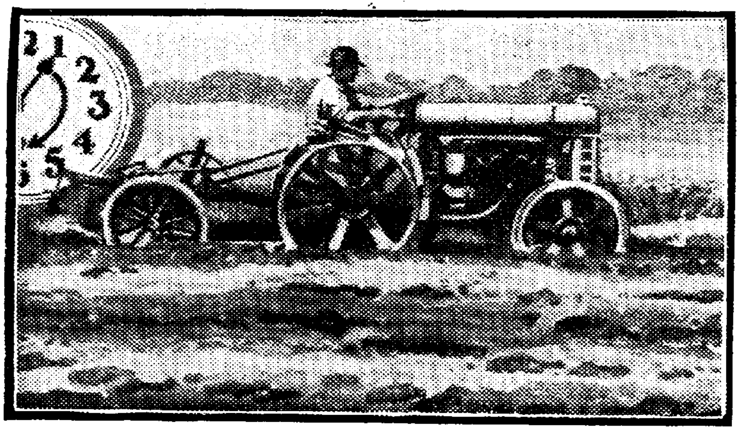
"J. H. B.," Appila, asks treatment of greasy heels.

Reply—I recommend you to use the following preparation:—Formalin, 1oz.; glycerine, ¼ pint; methylated spirits, ½ pint; mix. Apply daily with an old brush. Frequent washing is not advisable in these cases. As improvement takes place increase the interval between the dressings.

"A. T. M.," Kolballa, has cow frothing at the mouth and discharging at the nose.

Reply—The symptoms suggest some obstruction in the throat or gullet. The most common causes for such a condition would be the presence of a foreign body in either of these regions (choking) or the presence of some swelling, such as an abscess. You should, in the case of the former, note some external swelling along

Work the Clock Round with a FORDSON TRACTOR!



It will pay to investigate the

FORDSON

PRICE, £250,

Including Belt Pulley Attachment.

Also Sold on Easy Terms if required.

TIMES SAVED MEANS PROFITS EARNED.

The striking advantages of the Fordson is that ploughing and most of the preliminary operations of wheat cultivation, if necessary, can be carried on the whole 24 hours of the day. Besides operating ploughs, harrows, harvester, and seed drills, it can be profitably used for such work as threshing, chaff cutting, water pumps, wood sawing, also for hauling, but, of course, on this score, cannot compete with the Ford One Ton Truck for general haulage work, such as conveying produce to the market.

S.A. Distributors, DUNCAN MOTORS LIMITED, FRANKLIN STREET, ADELAIDE.

the gullet. Choking is usually accompanied by flatulence (hoven). In any inflammatory condition of the throat, abscess formation, &c., there is usually an external swelling in this region.

Hon. Secretary, Agricultural Bureau, Meadows, reports heifer, now 19 months old, which, after repeated services, fails to get in calf.

Reply—The barrenness of the heifer may be due to some abnormal condition of the genital organs, which can only be determined by an examination.

Hon. Secretary, Agricultural Bureau, Wilmington, reports blindness of draught horse; a dark-blue substance appears to be just below the pupil of each eye.

Reply—The blindness is probably due to some irritation or inflammation of the eye. Try 1 per cent. solution of silver nitrate. Apply a few drops with an eye dropper. Report again in a fortnight.

"R. H.," Aldgate, has aged pony mare constantly rubbing her tail against fences, &c.

Reply—It is probable that she is suffering from rectal worms. Give her the following powders in her feed:—Powdered sulphate of iron, 1½oz.; tartar emetic, ¾oz.; powdered gentian root 3oz. (mix). Divide into 12 powders. Give one twice daily in the feed. Give her also a rectal injection of warm soapy water containing a small quantity of turpentine (½oz. per gallon) for two or three days in succession.

"G. H.," Torrensville, reports cow calved a month ago, udder very hard, and of slight discoloration of the milk.

Reply—These last two symptoms indicate an inflammation of the udder. The present condition of the milk vessel is consequent upon this trouble. Milk her out carefully and thoroughly. You can give the affected portion plenty of gentle hand rubbing, using a little camphorated oil.

Hon. Secretary, Agricultural Bureau, Mallala, reports (1) horse with a large lump of limey substance in jaw and (2) cow that appears to choke when eating dry fodder.

Reply—(1) This may be a salivary calculus (stone in cheek). The wound will require regular attention or a salivary fistula will result. Cleanse carefully every day, and dress with antiseptic. (2) Cow with "choke." The abnormal condition which arises when feeding dry chaff is probably due to a dilation of the gullet. If this is in the upper portion of the tube it will be visible as a swelling in the neck (when impacted with chaff). The trouble may be regarded as incurable. If she is fat it would be advisable to sell her to the butcher. This trouble usually results in loss of condition.

Hon. Secretary, Agricultural Bureau, Carrow, reports cow with a swelling of the knee.

Reply—The swelling is due to a chronic inflammation of the joint, the result of an injury. It may have been caused by the continual bruising of the yoke. Such swellings if containing fluid may be opened at a suitable place to provide drainage, and with antiseptic precautions. The wound should be cleansed daily and syringed out with a weak solution of iodine. Operations of this kind, however, are better left alone unless skilled attention is available. If there is any heat or pain, irrigate frequently with cold water. I would not recommend destruction of the cow on account of a chronic enlargement of the knee so long as there is no cruelty involved in keeping her.

"D. T. L.," Talia, reports horse with swelling of jaws, paralysis of tongue, very nervy, and stiffness of joints.

Reply—The symptoms suggest a sub-acute form of tetanus (lockjaw). This is a wound infection disease, and, although you state there appears to be no wound, it is quite possible that a small puncture might be overlooked. Put him in a darkened loose-box and keep him as quiet as possible. Give him soft, laxative food. Place both feed and water at a height where they will be easily accessible, and give him Epsom salts, 4oz. daily, in food or water, but do not drench. In the case of snake bite there is a doughy swelling in the region of the bite, which should, in the case of a venomous snake, show the two puncture marks of the fangs. There is also weakness and prostration.

"M. G.," Kybybolite, reports aged pony mare in good condition, which developed swellings under chest, between fore legs, and under belly.

Reply—I advise you to give her cooling medicine—Epsom salts, 1oz., saltpetre one teaspoonful—twice daily in drinking water. Put her on laxative diet, and place her in a small yard or paddock for exercise.

"G. H. M.," Schuetze's Landing, has cow with wound in the middle of the udder.

Reply—I advise you to syringe it out with some mild disinfectant solution, such as boracic acid, one tablespoonful to a pint, or weak permanganate of potash solution (Condy's) about claret color. It may be necessary to enlarge the external opening so as to obtain drainage. You will find a household enema syringe an effective means of dressing the wound. Clip the hair off the part with a pair or sharp scissors. Dress once daily, and afterwards powder the wound with dry boracic acid.

"R. S. T.," Rockleigh, reports six year old mare, which ran an iron peg into her chest.

Reply—Keep the wound clean with warm water and washing soda. From its position it should drain effectively. It would be desirable, however, to syringe out the wound with about a pint of disinfectant solution. Dress once a day. Enlarge external wound if necessary. Proud flesh is not likely to give any trouble in a wound of this kind.

DEPARTMENTAL DOINGS.

Centres visited by the Director of Agriculture during the months of November and December include Edwardstown, where the Director addressed a meeting of gardeners on "Manures"; Mount Gambier, where he met members of the local Herd Testing Society; Millicent, where, in company with the members of the local Branch of the Agricultural Bureau, he inspected the experimental plots; and Berri, where he addressed a meeting of surrounding Branches of the Agricultural Bureau on "Drainage."

DAIRYING.

The Assistant Dairy Expert (Mr. H. J. Apps) visited Kybybolite, Blackwood, Marama, and Mount Gambier. At Marama he addressed a meeting of the Agricultural Bureau, and at Mount Gambier a meeting of the Herd Testing Association.

POULTRY.

The Poultry Expert (Mr. D. F. Laurie) addressed meetings of the Agricultural Bureau at Lone Pine and Currency Creek.

GENERAL.

The Secretary Advisory Board of Agriculture (Mr. H. J. Finnis) attended a homestead meeting of the Brinkley Branch of the Agricultural Bureau, in company with the Government Veterinary Surgeon (Mr. C. V. Loxton, L.V.Sc.); addressed the inaugural meeting of the Farrell's Flat Branch of the Agricultural Bureau; attended the annual farmers' visiting day at the Government Experimental Farm, Kybybolite; and addressed a meeting of the Meadows Branch of the Agricultural Bureau.

REPORT ON SECOND YEAR OF OPERATIONS OF RIVER MURRAY HERD TESTING ASSOCIATION.

[By ARTHUR J. PERKINS, Director of Agriculture.]

On September 30th, 1922, the second year of operations of the River Murray Herd Testing Association was brought to a close. Herewith I submit a general statement of results achieved, together with comments on such points as appear to have public usefulness.

GENERAL CONDITIONS GOVERNING TESTS.

I shall recall, in the first place, the general conditions under which the herds have been tested. The Association is self-governing, and provides its own Recorder who is a paid servant of the Association, but neither financially nor personally interested in the competing herds.

The Recorder, however, works under the general supervision of Departmental officers. He visits each herd monthly, and weighs morning and evening milk of each cow in the herd, and subsequently tests the milk for butter fat percentage. A record of the results is then posted to the Department of Agriculture and entered in its official records; the Departmental staff is responsible for all subsequent calculations and determinations. The total amount of milk and butter fat recorded, multiplied by the number of days in the month, represents the total monthly output; whilst the latter sum divided by the total number of cows past their first calf in the owner's possession, whether dry or in milk, represents the mean output of the herd per cow per month. Finally, the sum of these mean monthly outputs represents approximately the mean output per cow per annum. It should be observed in this connection that milk drawn during the six weeks preceding calving and four days after calving is not credited to the cows concerned, and it follows that in one calendar year no cow is ever credited with more than 319 days' milk.

The owner may purchase new cows at any time of the year conditionally on his registering them with the Recorder as soon as they reach his property. The addition of new cows to the herd, whether dry or in milk, leads automatically to an increase in the number by which monthly outputs are divided. Similarly, heifers must be registered as soon as they drop their first calf.

In like manner, unsatisfactory cows may be sold at any time and automatically lead to a reduction of the dividing number. Deaths are dealt with similarly.

In brief summary these are the general conditions under which these tests have been conducted.

THE 1921-22 COMBINED ASSOCIATION RESULTS.

The combined Association results are indicated below in Table I.:—

TABLE I.—*Showing Combined Results of River Murray Herd Testing Association for* 1921-22 *Season.*

Month.	Average Cows Under Test.	Average Cows in Milk.	Average Butter Fat Test.	Milk.		Butter Fat.	
				Produced by Association.	Per Cow.	Produced by Association.	Per Cow.
1921-22.	Cows.	Cows.	Per cent.	Lbs.	Lbs.	Lbs.	Lbs.
ber	277·71	228·94	4·34	183,366·5	660·28	7,953·07	28·64
mber ..	281·37	230·41	4·21	166,718·5	592·52	7,015·09	24·93
mber ..	284·78	237·36	4·35	181,525·5	637·42	7,902·25	27·75
ary	285·62	235·00	4·35	181,592·5	635·78	7,890·23	27·62
uary ...	293·82	247·39	4·36	167,401·5	569·68	7,293·18	24·82
h	293·22	243·33	4·49	169,982·5	579·71	7,625·27	26·01
l	286·00	231·11	4·47	144,456·5	505·09	6,455·07	22·57
....	288·41	235·84	4·57	149,400	518·01	6,822·66	23·66
....	296·00	239·02	4·35	163,344·5	551·84	7,099·37	23·98
....	298·93	238·52	4·51	168,240	562·81	7,592·94	25·40
ust	300·78	232·10	4·28	178,786	594·41	7,655·07	25·45
ember ..	299·75	228·26	4·30	178,758·5	596·36	7,684·60	25·64
s	290·53	235·61	4·38	—	6,999·53	—	306·30
Total production for year				2,033,572·5lbs Milk	—	88,988·80lbs. Butterfat.	

The salient features of this table may be summarised as follows:—

1. The mean number of cows under test was represented by 290.53 head.

2. The mean number of cows in milk was 235.61, or 81.1 per cent. of the numbers present in the herds. This gives a mean milking period of 296 days.

3. The mean output of milk per cow per annum was represented by 699.95galls., or 2.36galls. per day over the mean milking period, or 1.92galls. per day over the full 12 months.

4. The mean output of butter fat per cow per annum was represented by 306.3lbs., or 1.03lbs. per day over the mean milking period, or 0.84lbs. per day over the whole 12 months.

5. On the basis of a 15 per cent. over-run, this would represent 352¼lbs. of butter per cow per annum, or 8⅓lbs. per cow per week over the mean milking period, or 6¾lbs. of butter per cow per week over the full 12 months.

6. From month to month milk yields were fairly regular, with a a mean maximum of 2.13galls. per day in October and a minimum of 1.63galls. in April. It is probable, however, that total yields could have been improved by more generous feeding between April and July.

7. Butter fat production varies on somewhat similar lines with maximum production between October and February (0.89lbs. to 0.92lbs per diem) and minimum production in April and May

(0.75lbs. and 0.76lbs. per diem). It is noticeable, however, that the rush of spring feed in August is more conducive to milk production than that of butter fat.

1921-22 RESULTS CONTRASTED WITH COMMONWEALTH MEAN FIGURES AND RETURNS FROM SIMILAR ASSOCIATIONS IN GREAT BRITAIN.

As might have been expected, these returns are very satisfactory relative to the mean returns for the State and the Commonwealth. The most recently available statistics show the mean returns for a period of five years—1915-1919—to be as follows:—

Victoria	350galls. per cow
South Australia	319galls. "
New South Wales	288galls. "
Tasmania	251galls. "
Queensland	230galls. "
Western Australia	217galls. "
Commonwealth	293galls. "

Similarly, the recently published results concerning similar Associations in Great Britain show the River Murray Herd in a very favorable light. I have summarised these results below in Table II.:—

TABLE II.—*Summarising* 1917-21 *Herd Testing Results in Great Britain.*

Seasons.	Number of Societies.	Cows Under Test.	Milk.	
			Mean Yield Per Cow Per Annum.	Percentage Improvement.
			Galls.	Per cent.
1917–18	27	19,793	426	—
1918–19	38	37,880	450	5·6
1919–20	46	61,323	479	6·4
1920–21	52	97,903	495	3·3

The rapid increase of these Societies in Great Britain is a tribute to their value. It is satisfactory to note, too, that there has been a yearly improvement in the milk yield of cows under test. When, however, these improvements are reduced to a percentage basis they illustrate the law of diminishing returns.

COMPARISON OF 1921-22 AND 1920-21 RESULTS.

The mean 1921-22 results of the River Murray Herd Testing Association are slightly superior to those of 1920-21—2.13 per cent. for mean milk yield per cow and 2.57 per cent, for mean butter fat yield

HUBAM.

YIELDS AN ABUNDANCE OF SPRING AND SUMMER PASTURE, GREEN FEED, OR HAY.

THE GENUINE IOWA GROWN HUBAM, on account of its quick growth, is especially valuable for fitting in the rotation between two winter crops of grain, and will, in a few months, fully restore the humus and nitrogen taken from the soil by the preceding crops.

1. CAN BE PASTURED, CUT FOR GREEN FEED, OR MADE INTO HAY.
2. RESTORES THE HUMUS AND NITROGEN TAKEN FROM THE SOIL BY THE PRECEDING CROP.
3. A MARVELLOUSLY QUICK SOIL RESTORER.
4. AN EXCELLENT WEED DESTROYER WHEN SOWN THICKLY.
5. YIELDS AN ABUNDANCE OF SPRING AND SUMMER PASTURE, GREEN FEED, AND HAY.
6. A WONDFRFUL HONEY PLANT FOR BEES.
7. CAN BE GROWN UNDER A REMARKABLY WIDE RANGE OF CLIMATIC CONDITIONS.

PRICE, 12s. 6d. per lb., Postage Extra.

BRUNNINGS

(F. H. BRUNNING PTY., LTD.,

64, ELIZABETH ST., MELBOURNE.

per cow Other salient features of interest in the two seasons are summarised in Table III. below:—

TABLE III.—*Contrasting* 1921-22 *and* 1920-21 *Results of the River Murray Herd Testing Association.*

	1921–22.	1920–21.	Percentage Increase.
Mean number of cows in herd	290·5	305·5	— 4·91
Mean number cows in milk......................	235·6	256·2	— 8·05
Percentage of cows in milk......................	81·1	83·9	— 3·34
Mean milking period.......................days	296	306	— 3·27
Mean milk per cow per annum..............galls.	699·95	685·32	+ 2·13
Mean milk per cow per diem ....galls.	1·92	1·88	+ 2·13
Mean butter fat per cow per annum ....lbs.	306·30	298·63	+ 2·57
Mean butter fat per cow per diem...........lbs.	0·84	0·82	+ 2·57
Mean butter per cow per week ....lbs.	6·76	6·59	+ 2·58

It will be noted that the mean milking period in 1921-22—296 days—was 10 days shorter than was the case in 1920-21; this, of course, is a matter of management, but is also a factor tending to reduce gross production for the year.

It should be pointed out that, out of the 15 herds of which the Association consisted in 1921-22, six were new herds which had not taken part in the 1920-21 tests. If we contrast the nine herds, which were under test for two consecutive seasons, the rate of progress in the second year will be seen to be far more pronounced. Data concerning these nine herds have been summarised in Table IV. below:—

TABLE IV.—*Contrasting* 1921-22 *and* 1920-21 *Results for the Nine Herds Present in Both Season's Tests.*

	1921–22.	1920–21.	Percentage Increase.
Mean number of cows in herd	181·62	190·45	— 4·64
Total milk production ....galls.	140,470·6	138,226·2	+ 1·62
Mean milk per cow per annum..............galls.	773·43	725·79	+ 6·56
Total butter fat production ....lbs.	59,446·43	58,814·39	+ 1·07
Mean butter fat per cow per annum ....lbs.	327·31	308·82	+ 6·00

Thus, it will be seen that for these nine herds continuously under test, although the number of cows in the second year was reduced by 4.64 per cent., total production of milk increased by 1.62 per cent., and of butter fat by 1.07 per cent.; whilst mean production per cow per annum was increased 6.56 per cent. in the case of milk and 6.00 per cent. in the case of butter fat. This represents satisfactory progress, which it is hoped will be continued in future years.

A general improvement of 48galls. per cow per annum represents, at present prices, an increased gross return of about £2 per cow per annum, which, if referred to the dairy cows of the State, would total more than £300,000 in increased gross revenue.

1921-22 RESULTS REFERRED TO COMPETING HERDS.

In Table V. general results have been tabulated, so as to show their bearing upon individual competing herds.

TABLE V.—*Showing Individual Results of River Murray Herd Testing Association Herds Competing in* 1921-22.

erd.	Period Under Test.	Mean Cows in Herd.	Mean Cows in Milk.	Milk.		Mean Butter Fat.	Butter Fat.	
				Total.	Per Cow.		Total.	Per Cow.
	Months.	Cows.	Cows.	Lbs.	Lbs.	Per cent.	Lbs.	Lbs.
..	12	49·54	40·73	475,144·5	9,606·39	3·84	18,259·14	369·23
...	12	27·99	23·57	252,544·5	8,982·96	4·02	10,162·05	362·17
..	12	12·70	10·63	98,583·5	7,784·56	4·56	4,470·37	353·07
..	12	13·10	10·76	94,510	7,208·97	4·71	4,446·57	339·12
..	12	14·61	11·62	106,666·5	7,308·56	4·43	4,725·07	323·72
..	12	11·02	8·73	81,872·5	7,507·18	4·23	3,466·16	317·95
..	12	13·99	11·58	87,437·5	6,218·54	4·77	4,169·15	296·69
..	12	16·38	13·44	106,227	6,506·99	4·54	4,825·86	295·87
..	12	16·67	13·54	100,713·5	6,052·74	4·67	4,700·34	282·23
..	12	13·11	10·35	73,573	5,599·06	5·03	3,699·36	281·62
..	12	33·70	26·03	200,962·5	5,985·40	4·69	9,420·64	280·31
..	12	13·89	10·34	81,555	5,992·28	4·46	3,639·39	268·14
..	12	18·32	15·07	99,590	5,406·94	4·81	4,692·09	255·08
..	12	15·75	13·52	83,268·5	5,259·42	4·63	3,853·85	243·65
..	12	19·76	15·70	90,924	4,581·76	4·90	4,458·76	225·51
ans	12	19·37	15·71		6,999·53lbs. or 699·95galls.	4·38		306·30
otal production for year ..				2,033,572·5lbs. Milk			88,988·80lbs. Butter fat	

It will be noted in the first place that, out of the 15 competing herds, practically 12 exceeded 600galls. of milk per cow per annum, six yielded over 700galls., and two 900galls. and over. Similarly, six herds, averaged over 300lbs. of butter fat per cow per annum, and three—the prize winners—over 350lbs.

PRIZES.

The Government prizes were awarded as follows:—

First Prize.—Mr. J. A. Halliday, with 369.23lbs. of butter fat per cow per annum and 960.64galls. of milk.

Second Prize.—Mr. C. J. Morris, with 362.17lbs. of butter fat per cow per annum and 898.30galls. of milk.

Third Prize.—Mr. L. G. Foster, with 353.07lbs. of butter fat per cow per annum and 778.46galls. of milk.

The prize winners are to be congratulated on the excellent results they have secured.

CHANGES IN THE HERDS DURING THE YEAR.

It is open to every member of the Association to buy or sell cows during the course of the year; similarly, cows may die and heifers on their first calf will be admitted to the milking yards. In all such cases the cows concerned affect the mean yearly yield of the herd for the fraction of year only over which they are present as milkers. Variations in the herds covering these points are indicated below:—

	1921-22.		1920-21.	
Opening numbers	287		246	
Purchases	35		24	
Heifers on first calf	41		22	
Sales		39		33
Deaths		17		2
Total	363		292	
Less reductions	56		35	
Closing numbers	307		257	

It will be noted that relatively to 1920-21, deaths have been rather heavy in 1921-22, viz., 17 head, or about 4.7 per cent. of total numbers forming part of the Association.

HERD 1/G (MR. J. A. HALLIDAY).

For the second year in succession Mr. J. A. Halliday's herd has been placed first, both for mean output of milk per cow per annum (960.64galls.), and for mean output of butter fat (369.23lbs.). He is to be congratulated on the excellent results secured.

This herd, which consists of Friesans and Grade Friesans, was constituted as follows in the two seasons:—

	1921-22.	1920-21.
Cows on their first calf	16	11
Three years old	4	4
Four years old	3	9
Five years old	9	11
Aged	24	17

In Table VI. below the mean results of the two seasons have been summarised comparatively:—

TABLE VI.—*Results of Mr. Halliday's Herd in* 1921-22 *and* 1920-21 *Respectively.*

	1921-22.	1920-21.	Increase.	
			Total.	Percentage.
Mean number of cows in herd	49·54	46·23	+ 3·31	+ 7·16
Mean number of cows in milk	40·73	39·01	+ 1·72	+ 4·41
Percentage of cows in milk %	82·22	84·38	− 2·16	− 2·56
Mean milking period days	300	308	− 8	− 2·60
Mean milk per cow per annum galls.	960·64	939·21	+ 21·43	+ 2·28
Mean butter fat per cow per annum lbs.	369·23	364·29	+ 4·94	+ 1·36
Mean butter per cow per week lbs.	8·17	8·06	+ 0·11	+ 1·36
Mean butter fat percentage	3·84	3·88	− 0·04	− 1·03

This Farmer Saved £78 in Twenty-three Days

with a

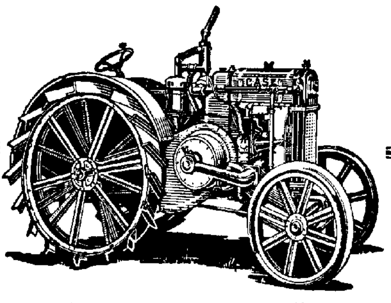
CASE

Kerosene Farm & General Purpose Tractor

THE following extract from an unsolicited testimonial from an enthusiastic CASE owner proves, beyond doubt, its ability to reduce to a minimum the cost of farming operations:

> "Wongarbon, N.S.W., 14/11/22.
>
> I worked the Tractor on top gear over all sorts of surface conditions, pulling the Sundercut and doing the hardest of the ground and was never stuck for reserve power. I also hitched the Tractor to two 10 Sundercuts and ploughed for three days on low gear. She handled this load with ease over undulating country, ploughing four inches deep. In the 23 days the Tractor ploughed 380 acres at a cost of 1s. 8½d. per acre for fuel used, including three tins of benzine and three tins of oil. I might mention that the Tractor gave no trouble at all, and, furthermore, was a pleasure to handle. By doing 380 acres in 23 days, the Tractor displaced three (3) eight-horse teams, representing a saving in fuel versus chaff of £58, and about £20 in wages. 'Undoubtedly the best thing on wheels.' Wishing you every success.
>
> I am, yours sincerely,
>
> (Sgd.) W. J. CAMPBELL."

The CASE can do the same for you! There's a size for each individual farmer's needs. Write for full specifications and beautifully illustrated catalog.



SOLE AUSTRALIAN AGENTS—

Commonwealth Agricultural Service Engineers, Ltd.,

Head Office: 53-57, MORPHETT STREET, ADELAIDE;
'Phone—Central 6870. BRANCHES IN ALL STATES.

C21

Briefly, the milk output per cow per annum has improved by 21.43galls. or 2.28 per cent., and the butter fat output by 4.94lbs. or 1.36 per cent. The improvement, of course, is not very striking, but it should be recollected that when a herd has reached a high degree of productiveness, as is the case with Mr. Halliday's herd, the limits within which further improvement is economically possible are not very great. No doubt in the course of time Mr. Halliday could probably exceed a 1,000gall. mean; it would, however, take not only time, but would depend also very largely upon favorable economic conditions. Mr. Halliday himself has expressed the opinion that he could have done done very much better in 1921-22 but for the fact that current prices for milk were unusually low, whilst those of mill offals were too high to admit of as thorough feeding as he could have wished. It should be noted, too, that the lowering of the 1921-22 mean milking period from 308 to 300 days will have had a corresponding influence in reducing total output.

As a further comparison between the two seasons, it may be stated that in 1920-21 12 of Mr. Halliday's cows yielded more than 1,000galls. of milk and 16 in 1921-22. In 1920-21 10 of his cows yielded more than 400lbs. of butter fat and 13 in 1921-22.

Over the two seasons 11 cows yielded more than 2,000galls. of milk. Details concerning their performance are shown in Table VII.:—

TABLE VII.—*Showing Records of Cows whose Two Years' Yields were in Excess of 2,000galls. of Milk.*

	Age. 1921-22.	Days in Milk.	Two Years.	
			Milk.	Butter Fat.
			Galls.	Lbs.
Donald's Maid	6	601	3,196	1,223
Mavis	4	589	2,568	970
Belle Donald	6½	629	2,561	954
Marie Donald	5½	638	2,378	922
Dolly Hawker	?	638	2,378	868
Donald's Pride	5½	644	2,162	901
Bud Donald	5½	593	2,123	739
Jessie Revel	5	601	2,096	816
Bolivar	10	565	2,081	737
Belgium	6	592	2,080	796
Winnie Revel	4¾	600	2,075	763

HERD 1/C (MR. C. J. MORRIS).

The second prize was secured by the herd of Mr. C. J. Morris. This herd, which occupied seventh place in 1920-21, has made more progress in 1921-22 than any of the other competing herds, and Mr. Morris is to be highly congratulated on the results achieved.

This herd consists of Grade Friesans distributed as follows in the two seasons:—

	1921-22.	1920-21.
Cows on their first calf	5	10
Three years old	9	9
Four years old	5	4
Five years old	4	8
Aged	10	21

Summarised comparison of 1921-22 and 1920-21 results respectively is shown below in Table VIII.:—

TABLE VIII.—*Comparison of Mr. C. J. Morris' Herd in* 1921-22 *and* 1920-21 *Results Respectively.*

	1921-22.	1920-21.	Increase.	
			Total.	Percentage.
Mean number of cows in herd	27·99	45·07	− 17·08	− 37·90
Mean number of cows in milk	23·57	36·54	− 12·97	− 35·50
Percentage of cows in milk ...... %	84·21	81·07	+ 3·14	+ 3·87
Mean milking period .... days	307	296	+ 11	+ 3·72
Mean milk per cow per annum.... galls.	898·3	715·53	+ 182·77	+ 25·54
Mean butter fat per cow per annum. lbs.	362·17	294·79	+ 67·38	+ 22·86
Mean butter per cow per week ... lbs.	8·00	6·50	+ 1·50	+ 22·86
Mean butter fat percentage ...... %	4·02	4·12	− 0·1	− 2·43

Table VIII. shows the improvement effected in Mr. Morris' herd in 1921-22 to have been very striking. He has increased the mean output of milk per cow per annum by close on 183galls. or 25.54 per cent., and the mean output of butter fat by 67.38lbs. or 22.86 per cent. At current prices this represents improvement in gross returns per cow per annum as whole milk of £6 17s. 1d. and of £5 15s. 9d. as butter fat and skim milk.

Two factors have contributed chiefly to these very satisfactory results—(1) weeding out of unprofitable cows, and (2) better management and feeding of the balance of the herd.

The herd was reduced by about 17 head, representing 37.9 per cent. of the original mean total. Among the cows discarded, however, was one of the best 1920-21 performers, the only one in fact which yielded over 400lbs. of butter fat and over 1,000galls. of milk in 1920-21.

The influence of treatment in 1921-22 is clearly shown by the largely increased number of cows yielding over 1,000galls. of milk and 400lbs.

of butter fat. A comparative statement for the two seasons is shown below in Table IX.:—

TABLE IX.—*Showing* 1921-22 *and* 1920-21 *Records Respectively of Cows Yielding over* 1,000*galls. of Milk or* 400*lbs. of Butter Fat in One Year.*

Cow.	Age.	1921–22.			1920–21.		
		Days in Milk.	Milk.	Butter Fat.	Days in Milk.	Milk.	Butter Fat.
			Galls.	Lbs.		Galls.	Lbs.
Ivy	6	305	1,398·7	494·3	297	913·0	329·0
Nancy	10	310	1,271·3	458·5	247	822·4	319·2
Tilly	5	319	1,138·3	416·8	296	962·1	378·2
Manx	3	319	1,131·9	400·6	297	724·8	249·6
Lorna	8	295	1,075·1	422·8	295	867·2	329·1
Tracy	4	319	1,056·4	422·2	299	686·4	268·8
Roughy	4	319	1,004·0	404·3	319	837·6	325·9
Eliza	4½	319	996·3	404·2	283	706·3	293·0
Jinny	8	319	957·4	417·7	312	812·7	372·2
Tiny	10	295	901·4	412·2	319	750·9	356·3
Yankee	3½	282	896·6	445·1	303	731·0	342·5
1920–21							
Rose	7	—	(sold)		282	1,075·2	415·0
Shamrock	9	—	(dead)		254	880·8	423·1

The results in Table IX. speak for themselves and show how well Mr. Morris profited from his first year's connection with a Herd Testing Society.

HERD 1/N (MR. L. G. FOSTER).

The third herd in order of merit is the property of Mr. L. G. Foster, who joined the Association for the first time in the 1921-22 season. In the circumstances, his herd's mean yield of 353.071lbs. of butter fat and 778.46galls. of milk is highly creditable, and Mr. Foster is to be complimented thereon.

Mr. Foster's herd consists of mixed Friesians, Jersey and Shorthorn crosses distributed as follows:—

Cows on their first calf	3
Three years old	1
Four years old	2
Five years old	3
Aged	7

One of Mr. Foster's cows (Nigger) yielded 1,049.8galls. of milk and 485.5lbs. of butter fat. Petsie yielded 954.5galls. of milk and 420.2lbs. of butter fat, and Roany 832.4galls. of milk and 441.2lbs. of butter fat.

HERD 1/A—(MR. B. H. GREEN).

Mr. Green's herd was placed second in 1920-21 and fourth in 1921-22. It consists of Jersey-Shorthorn crosses, and is always in excellent milking condition. The ages of the cows are as follows:—

	1921-22.	1920-21.
Cows on their first calf	2	—
Three years old	1	—
Four years old	—	2
Five years old	2	1
Aged	11	11

The mean milk yield of the herd in 1921-22 was 721.0galls. as against 710.9galls in 1920-21, an improvement of 1.4 per cent. The mean butter fat yield was 339.1lbs. as against 337.2lbs. in 1920-21, an improvement of 0.6 per cent.

Mr. Green appears to have been impressed with the results registered by the local Friesian herds and has placed a Friesian bull at the head of his herd.

HERD 1/K (MESSRS. G. & J. PALTRIDGE).

Messrs. Paltridge's herd was ninth in 1920-21 and fifth in 1921-22. It consists of Jersey and Shorthorn crosses. The ages of the cows are as follows:—

	1921-22.	1920-21.
Cows on first calf	3	—
Three years old	1	1
Four years old	1	2
Five years old	2	5
Aged	10	6

The mean milk yield of the herd in 1921-22 was 730.86galls. as against 612.91galls. in 1920-21, an improvement of 118galls. per cow, or 19.3 per cent. The mean butter fat yield in 1921-22 was 323.72lbs. as against 277.92lbs. for 1920-21, an improvement of 45.8lbs., or 16.5 per cent.

Two of Messrs. Paltridge's cows exceeded 400lbs. of butter fat in 1921-22, namely, Nancy, a Jersey-Shorthorn cross, with 965.6galls. of milk and 425.75lbs. of butter fat, and Lady, a Grade Shorthorn, with 872.9galls. of milk and 402.11lbs. of butter fat. No cows reached these figures in 1920-21.

The improvement in the returns from this herd are very satisfactory and second only to Mr. Morris' herd.

HERD 1/I (MR. P. H. PICKERING).

Mr. Pickering's herd, which was placed fifth in 1920-21, was sixth in 1921-22. It consisted of Illawarras and Grade Shorthorns.

The mean output of milik of this herd was 750.7galls. as against 727.3galls. in 1920-21, an improvement of 3.2 per cent. The mean output of butter fat was 317.95lbs. as against 303.3lbs. in 1920-21, an improvement of 4.8 per cent.

The ages of the cows were as follows:—

	1921-22.	1920-21.
Cows on first calf	2	5
Three years old	2	—
Four years old	—	1
Five years old	1	6
Aged	8	5

CONCLUSIONS.

In conclusion it may be stated that here at Murray Bridge two years' herd testing have already favorably influenced milk production, the most notable instances being the herds of Messrs. Morris and Paltridge. It is confidently anticipated that this influence in the direction of increased production will be even greater in the near future, and that it will have the effect of convincing other dairy centres of the value of herd testing.

I have summarised below in Table X. a statement showing the money value at current rates of the production of the various competing herds in 1921-22 and 1920-21.

TABLE X.—*Showing Money Value of Production per Cow of Competing Herds in* 1921-22 *and* 1920-21.

Competing Herds.	1921-22.		1920-21.	
	As Whole Milk.	As Butter Fat and Skim Milk.	As Whole Milk.	As Butter Fat and Skim Milk.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1/G	40 0 6	31 8 4	39 2 8	30 18 10
1/C	37 8 7	30 10 2	29 16 3	24 14 5
1/U	32 8 9	29 1 1	—	—
1/A	30 0 10	27 14 4	29 12 5	27 10 3
1/K	30 9 1	26 15 2	25 10 9	22 17 5
1/I	31 5 7	26 10 4	30 6 1	25 7 5
1/L	25 18 3	24 3 8	26 4 5	23 15 11
1/E	27 2 3	24 6 8	26 10 3	24 15 5
1/J	25 4 5	23 2 0	28 6 10	25 8 0
1/T	23 6 7	22 14 10	—	—
1/O	24 18 9	22 18 6	—	—
1/S	24 19 4	22 2 3	—	—
1/M	22 10 7	20 16 8	19 11 2	17 14 8
1/V	21 18 3	19 19 5	—	—
1/R	19 1 10	18 5 7	—	—
Association Mean	27 15 7	24 13 11	28 6 9	24 15 9

In the above table whole milk is valued at 10d. a gallon, butter fat at 1s. 4d. a pound, and skim milk at 2d. a gallon.

I append herewith a report submitted by the Assistant Dairy Expert (Mr. H. J. Apps), after inspecting the various herds at the close of the second year of operations:—

"Acting under your instructions, I have to report having inspected the herds of the members of the River Murray Herd Testing Association on the 20th and 21st September, 1922.

"It has been forcibly demonstrated to me that during the last twelve months greater interest has been displayed in the feeding and care of the stock, and, in some of the herds, an effort has been made to improve the system of breeding by discarding inferior animals and replacing a nondescript bull with a pure-bred one. I found on my visit that all the herds, with the exception of two, are headed with pure-bred animals, but, in one of these instances, a pure-bred animal would have been purchased only none was available for sale.

"Several instances of the advantages of herd testing were brought under my notice. Two members, who were desirous of augmenting their herds, purchased one and two cows respectively from a non-member of the Association, who had discarded them as worthless, yet under test they proved considerably better than many animals in the tested herd, and the present owners are quite content to retain them. In another case a cow was disposed of before the owner obtained her final figures and when these were available he was surprised to find that he had sold one of his best cows. Another member, showing me through his herd, pointed out several cows which he intended to sell as their records were no good. He remarked 'that it was not guess work,' but happily he knew their performance.

"*J. A. Halliday's* herd consists of 51 head of a few pure-bred and high grade Friesians. They were in the first class milking condition. This herd is gradually being worked up to such a state of perfection that many animals would pass as pure-bred as regards type conformation, and it was quite apparent the owner is out to bring about uniformity. It should not be many years before the herd will equal almost any in the Commonwealth as regards type, uniformity, and production. It would be a very good idea if members were to pay annual visits to other herds and see what the owners are doing, and possibly they may be enabled to pick up a few points. The herd bull in Mr. Halliday's herd is a pure-bred Friesian.

"*P. H. Pickering's* herd consists of 12 head of Illawarra and Grade Shorthorns. They are a good type of dairy cow, in first-class condition, and in a few seasons should be considerably improved. The herd bull is an imported Illawarra.

"*G. G. Hall's* herd consists of 16 head, comprising eight heifers of grade and cross-bred Jerseys and cross-bred Shorthorns. Their condition could only be considered fair. Last year the herd bull was of the Jersey breed, but for this year's operations he is using the neighbor's Shorthorn animal. It is to be regretted that a member should see-saw with his breeding in this fashion as the outcome is far from satisfactory. I strongly advise him to stick to one breed of bull.

"*H. H. Clarke.*—This herd comprises 18 head of grade and cross-bred Jerseys and Grade Shorthorns. Condition medium. They do not carry the bloom of some of the other herds The herd bull is a Shorthorn of the milking strain.

"*H. C. Prosser.*—In this herd there are 18 members of grade and cross-bred Jerseys. They are in fair condition and do not possess sufficient dairy type, but the progeny of the Jersey bull, which are coming on, should show a great improvement on their dams. A pure-bred Jersey bull is at the head of the herd.

Paltridge, G. & J., are the owners of 14 head of cows, which are only in fair condition. The breeds consist of Jersey and Shorthorn crosses. They are not very striking from a dairy point of view, and unfortunately there is not much hope of improvement by using a cross-bred animal of the Red Poll and Shorthorn strains.

"*S. Cheetham.*—This herd comprises 14 head of grade and cross-bred Jerseys. They are fairly uniform in types and in capital milking condition. The herd bull is a pure-bred Jersey, and the future progeny should considerably enhance their value as dairy cows.

"*L. G. Foster's* herd of 12 cows comprise cross-bred Friesians, Jersey and Shorthorn cross. Condition is good and a fair type of animal. The herd bull is a Shorthorn.

"*E. W. Paterson's* herd of 13 head comprise grade and crosses of the Jersey breed. Their condition may be stated to be good. The herd sire is a Friesian.

"*G. G. Wright* has 15 head of cattle including three aged cows, mixed breeding of Jersey and Shorthorn grades and crosses. Their milking condition could only be considered fair and lacks bloom. They do not possess the necessary dairy type. The herd bull is a Jersey.

"*W. Baldock* has 22 head of cattle consisting of grade and cross-bred Jerseys and Shorthorn crosses. Their condition is fair, but improvement may be expected in a few years through the influence of the herd bull which is a Jersey.

"*B. H. Green.*—This herd is composed of 13 head of Jersey and Shorthorn crosses. They are a nice deep-bodied type of cow in perfect condition and showing plenty of bloom. The herd bull is a Friesian.

"*C. J. Morris* has 30 cows of grades and crosses of the Friesian breed. They show plenty of dairy type and are in splendid condition. Perhaps this herd has shown the greatest improvement during the last year, and it is quite reasonable to expect it to develop into a very fine herd in a few years. The herd sire is a Friesian.

"*E. W. Mountstephen's* herd consists of 38 cows, being a mixture of grade and crosses of the Jersey and Shorthorn breeds. Their condition is from fair to good, and with a little culling would considerably add to the uniformity of type. The herd bull is a cross-bred Shorthorn.

"*G. E. Bagot.*—This herd of 12 cows consists of Jersey and Shorthorn crosses. Their condition is good and they are not bad types of cows. The herd bull for the first portion of the year was of Friesian grade. This animal, however, died and a Shorthorn took his place.

"Some of the members have experienced a lot of trouble with mammitis during the last year, but they are gradually beginning to realise that mammitis is caused by a germ and are, therefore, paying more attention to the affected animal and the destruction of affected milk:

"The most outstanding feature of the year's operations was the fact that every member could point out respective cows and state their performances, and when the duffers were pointed to, the remark was made, 'She is for sale, I cannot afford to keep her.' "

MAITLAND BRANCH OF THE AGRICULTURAL BUREAU.

FIRST ANNUAL CROP COMPETITION, 1922.

[By W. J. Spafford, Superintendent of Experimental Work.]

The Maitland Branch of the Agricultural Bureau inaugurated Crop Competitions this year, by offering prizes for the best wheat crop grown in the district, the entries to consist of at least one-half of the farmer's wheat crop, but a minimum of 75 acres had to be submitted to the judge by wheatgrowers with less than 150 acres of this crop. The Committee of Management drew up the scale of points to which the judging of the crops was to be done, and decided that the judge was to give the full marks allowed for "apparent yield" to the crop which he considered likely to give the greatest yield of grain per acre, and reduce all others proportionately for this section of the marks. The scale of points arranged by the committee is as follows:—

Apparent yield	35
Trueness to type	20
Evenness	15
Freedom fron disease	15
Freedom from weeds	15
	100

The crops submitted for judging have been marked to this scale of points as follows:—

Name and Address.	Variety.	Area.	Apparent Yield	Trueness to Type.	Evenness.	Freedom from Disease.	Freedom from Weeds.	Total.
		Acres.	35	20	15	15	15	100.
Mrs. F. Greenslade, Urania	Currawa .... Major .... Marshall's No. 3..	110 30 60	35	18	14	12	13·5	92·5
S. McCauley, Maitland	Ford .... Currawa .... Nugget	90 20 40	33	18	13·5	12·5	13	90
E. F.Maloney, Maitland	Ford	75	31	17	13	14	13	88
W. J. H. Smith, Cunningham ...	Nugget .... Currawa	120 140	28	18·5	13	13	13·5	86
D. E. Madigan, Maitland	Ford	75	27	17	13	14	14	85
D. E. Brown, Maitland	Belgian Wonder .	75	30	19	12	11	12	84
C. Schwartz, Kilkerran	Currawa .... Ford .... Queen Fan ..... Florence	12 35 13 15	25	18	13	14	12	82
A. W. Kelly, Urania	Queen Fan ..... Ford .... Florence	100 90 120	21	18·5	13·5	14·5	14	81·5
G. Boxhall, Maitland	Nugget	110	24	17	13·5	13	13	80·5
E. Arrowsmith, Maitland	Federation ...... Nugget	60 60	26	17	13	8	9	73
J. Peterson, Cunningham	Currawa .... Gallipoli	60 15	22	15	12·5	11·5	11·5	72·5
L. Tippett, Maitland	Federation	75	21	16	11	13	11	72
G. F. Pearce, Maitland	Currawa .... Federation	30 50	20	14	11	12	13	70

THE COMPETING CROPS.

1. *Mrs. F. Greenslade* (Currawa, 110 acres; Major, 30 acres; Marshall's No. 3, 60 acres).—As the marks allotted show, this was considered a very fine crop. The Currawa was fairly true to type; nice and even, except that a few patches were very heavy and luxuriant. and, as a consequence "blighted" a little; a strip along south side contained some "bunt," and some flag smut was present; other than a little barley, very few weeds existed. The Major contained very few "rogue" plants; was a very even crop but for a number of misses when drilling; flag smut was in evidence; charlock and barley were noticeable. The Marshall's No. 3 contained some bearded wheat; was very even and regular except for many drill misses; contained some flag smut; was free from barley, but contained charlock and poppies.

2. *Mr. S. McCauley* (Ford, 90 acres; Currawa, 20 acres; Nugget. 40 acres).—The three varieties in the exhibit contained some admixture

of other varieties, one brown-chaffed wheat being found in all of them. The Ford was a nice even crop, standing very well; the Currawa was also fairly regular, but inclined to lodge; but the Nugget was a bit patchy towards the west end. Ford was practically free from disease; Currawa was badly affected with "bunt"; and Nugget showed a fair amount of flag smut and loose smut. Had the Currawa formed a larger proportion of the crop shown than was the case, very few points for "freedom from disease" would have been received. The block of Currawa carried a nice clean crop with a little charlock and poppies, but the other two varieties had a noticeable amount of charlock, wild oats, drake, poppy, and soapwort, and the Nugget contained some barley.

3. *Mr. E. F. Maloney* (Ford, 75 acres).—The block of Ford wheat contained some brown-chaffed and some bearded wheats in admixture; was not as even and regular as could be desired, owing to too thin seeding in places or faulty germination and a fair number of drill misses; was free from diseases other than a little flag smut; was free from barley, but contained charlock, poppy, canary grass, wild oats, and soapwort.

4. *Mr. W. J. H. Smith* (Nugget, 120 acres; Currawa, 140 acres).—The Currawa was fairly true to type, but Nugget contained a little of other wheats as (*a*) bearded, (*b*) woolly chaff, (*c*) brown chaff; both crops were fairly even except for "take-all" patches, limestone outcrops, and damage by rabbits; both crops were affected a little by "take-all" and flag smut; both were fairly clean crops, except for spear thistles, which were really bad in places, a little barley in the Nugget, and a little of charlock, drake, cockspur, and catchfly.

5. *Mr. D. E. Madigan* (Ford, 75 acres).—This crop of Ford contained some brown-chaffed and bearded wheats; was comparatively free from irregular patches, but gradually sloped away from a really good crop on one side of the block to only fair on the other side; was disease-free except for flag smut, and was nice and clean except for poppy and a few plants of charlock, wild oats, and soapwort.

6. *Mr. D. E. Brown* (Belgian Wonder, 75 acres).—Although this crop showed a mixture of purple and yellow straws, this is typical of the variety as grown by most farmers, and it contained but little of other kinds; the bulk of the crop was tall and regular, but the remainder was really patchy; some "bunt" and some loose smut were present, and rather marked indications of "eelworm" attacks; wild oats were plentiful, and some canary grass, sheep weed, and charlock, but no barley.

7. *Mr. C. Schwartz* (Currawa, 12 acres; Ford, 35 acres; Queen Fan, 13 acres; and Florence, 15 acres).—All varieties showed the same admixture of some brown-chaffed wheat; most of the crop was fairly even, but the Queen Fan was rather patchy; the whole lot were disease-free except for loose smut and flag smut; some barley was present in all varieties, and patches of wild oats, poppy, catchfly, and canary grass.

8. *Mr. A. W. Kelly* (Queen Fan, 100 acres; Ford, 90 acres; Florence, 120 acres).—All varieties were fairly true to type, but contained some brown-chaffed wheat; the Ford was a nice even and regular crop, but

both the others were patchy; Queen Fan and Ford contained a little flag smut, and Florence showed a little "take-all"; both Queen Fan and Florence contained a little barley, and they all showed poppy, charlock, and sheep weed, and in patches sand rocket was noticeable in the Florence.

9. *Mr. G. Boxhall* (Nugget, 110 acres).—This block showed some brown-chaffed wheat; was a bit irregular, showing a few saline patches and a few waterholes; contained a good deal of flag smut and some "take-all," and besides being rather dirty with cockspur, had the following weeds in evidence:—Barley, wild oats, charlock, drake, canary grass, and soapwort.

10. *Mr. E. Arrowsmith* (Federation, 60 acres; Nugget, 60 acres).—Brown-chaffed wheats were present in the Nugget, and a white beardless wheat in the Federation; both crops were patchy and far from regular; Nugget contained flag smut, "bunt," and loose smut, but although Federation contained the first two diseases, the latter was absent; both crops were dirty with turnip, wild oats, drake, and soapwort, and contained some barley, charlock, poppy, and sand rocket.

11. *Mr. J. Peterson* (Currawa, 60 acres; Gallipoli, 15 acres).—The Currawa contained a narrow-headed wheat and a brown-chaffed variety, whilst Gallipoli showed some of at least four other kinds; the irregularities of the Currawa were largely due to "take-all," but the Gallipoli was fairly even; the Currawa contained a good deal of "take-all," some flag smut and loose smut, and a little "bunt," whereas Gallipoli only had flag smut and a little "take-all"; sheep weed and wild oats were fairly plentiful, and some catchfly, charlock, sow thistles, and poppies were present.

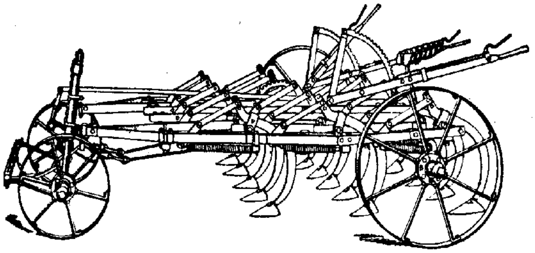
12. *Mr. L. Tippett* (Federation, 75 acres).—This crop contained quite a fair amount of other wheats, was very patchy, showed much loose smut, and had the following weeds in quantity:—Barley, sheep weed, catchfly, poppy, charlock, cockspur, soapwort, and sand rocket.

13. *Mr. G. F. Pearce* (Currawa, 30 acres; Federation, 50 acres).—The Currawa was rather badly mixed with other varieties, and the Federation contained at least three other kinds; most of the Currawa was fairly even, but the remainder, and the Federation, were patchy; Currawa showed loose smut, flag smut, and "eelworms," whilst Federation had a little "take-all" and much flag smut; although Currawa was fairly clean, Federation was rather weedy, the worst weeds being barley, wild oats, hog weed, poppy, with some charlock and sand rocket.

OBSERVATIONS AND RECOMMENDATIONS.

During the tour of the Maitland district on Yorke Peninsula in connection with these competitions many extremely good wheat crops were seen, but much improvement could still be made in the wheat crops by more attention to some of the details, which are quite necessary if maximum crops are to be aimed at. In some of the crops entered for competition, as well as in many other crops, quite a number of controllable weaknesses were in evidence, all of which do something towards reducing the returns secured from the land, and all of which

TRAEGER'S
Stump-Jump Implements
Ploughs, 4 to 10 Furrows. Cultivators, 13 to 21 Tynes.



The illustration shows our 17-TYNE IDEAL LOCK SPRING CULTIVATOR. This implement has proved itself invaluable in hilly and stony land; it is easily adjustable, and will stand up to the roughest work. We also supply bridle draught cultivators, if required, and can deliver from stock. We also manufacture

PLOUGHS,
HARROWS,
HAY TROLLIES.

Our hay trollies are well known and require very little comment on our part, but we would like to stress the following points:—

Soundness of Construction and Seasoned Timber, Correct Setting of Axles and Alignment, ensuring the Lightest Possible Draught.

ASK FOR AND SEE THAT YOU OBTAIN

TRAEGER'S CULTIVATOR SHARES

From your local supplier; if he cannot supply we will be pleased to send your requirements direct.

PRICE LIST AND PRINTED MATTER ON APPLICATION.

J. G. TRAEGER & SONS,
HAMLEY BRIDGE, SOUTH AUSTRALIA

should be controlled to a greater extent than at present. Amongst the worst of these troubles are:—

1. The presence of "bunt" or stinking smut.
2. "Take-all" much in evidence.
3. The prevalence of flag smut.
4. The introduction of bad weeds, such as barley and drake, with the seed.
5. Wheats grown which are badly "mixed" with other varieties.
6. The growing of obviously unsuitable varieties.
7. Too little seed used where the weeds are not killed when fallowing.
8. Insufficient fertiliser.
9. The presence of "eelworms" in the cereal crops.

1. "BUNT," OR STINKING SMUT (*Tilletia tritici*).

Of the smuts, "bunt" is by far the worst that South Australian farmers have to contend with. With this fungus the fertile branches are produced in the ear of the wheat plant, and the spores are formed inside the skin which in ordinary circumstances would have enveloped the wheat grain. This collection of spores, covered by a skin as it is, is known as a bunt ball, or smut ball, and consists of a mass of evil-smelling dark-brownish powder, from which fact arises its name, stinking smut. The damage done by the disease is the reduction of yield through the grain being replaced by the spores, and the lessened value of the grain for milling purposes, because the offensive odor and dark color of the spores spoil both the color and odor of the flour made from affected wheat.

Infection of Wheat Crops by "Bunt."

As the collections of spores are contained in the skins of the wheat grains, and these are held by the glumes or chaff of the wheat heads exactly as if they were sound grains, the diseased heads are harvested with the healthy ones, and the spores of the "bunt" are mixed with the good grain at harvest time. Any of this grain used for seed is already infected by the disease, and given ordinary seeding conditions the resulting crop will be diseased. This is the main infection for "bunt"; indeed, the infection of the seed is the only one of any account in ordinary practice, and if not brought about through the crop being "bunty" it is often done by using machines already covered with spores, or putting the grain for seed into bags that had previously held "bunty" grain.

Preventative Treatment for "Bunt."

The most practical way of preventing this disease is to kill the spores before the grain is sown at seeding time, by treating the seed with a substance that will prevent the spores from germinating, without injuriously affecting the wheat grains. Of these substances, a solution of copper sulphate or bluestone in water is effective.

Copper Sulphate as a "Pickle" to Prevent "Bunt."

The efficacy of this treatment of seed with a solution of copper sulphate to kill the "bunt" without injuring the grain rests mainly on the two following points:—(*a*) The strength of the solution in water, and (*b*) the thorough wetting of all the grain. (*a*) The solution should be at least what is known as a 1 per cent. solution, and not more than 1½ per cent. solution, except in extraordinary cases. These strengths are roughly represented by 1lb. of copper sulphate in 10galls. of water for a 1 per cent. solution, and 1½lbs. copper sulphate in 10galls. of water for a 1½ per cent. solution; 1 per cent. is strong enough if the seed to be pickled is not very badly infected; 1½ per cent. makes it a little surer, but is unnecessarily strong in anything but bad cases; and over 1½ per cent. certainly kills all the "bunt," but also reduces the germinating powers of the grain rather considerably. (*b*) To wet thoroughly the grain with the solution, some method that rubs the grains well together must be used. If this is not done, air bubbles remain on the surfaces of the grains, and many spores of the fungus can nestle under these and never become wet. This can be illustrated by dropping a handful of grain into a bottle containing some solution, when the air bubbles on grains are easily seen, and if the grain be left in the bottle for a week the bubbles will be found to remain intact. That each of these air bubbles may cover a lot of the spores is easily recognised if one remembers that the spores are microscopic, and so small that it takes from between 2,000 and 3,000 of them placed alongside one another to extend 1in. The best method of rubbing these grains together so as to break these air bubbles is to use a shovel to turn a heap of loose wheat on a floor, after pouring the requisite amount of solution on to the heap; this method will necessitate the use of about 2½galls. of solution to a bag of seed. The heap should be turned over from three to five times. Where no suitable floor is available the next best method of pickling with a copper sulphate solution is to put about 1bush. of seed in a bag, tie it loosely, and immerse the bag in the solution for five minutes or so. There are a number of pickling machines on the market, most of which rely largely on the fact that all unbroken "bunt" balls and other light material floats on the surface of the liquid and can be skimmed off. This is certainly a great advantage when the seed is dirty and badly "bunted," but it is only one part of the operation, and really not as important as rubbing the grains together to wet them thoroughly. Seed that has been pickled with a bluestone solution can be left almost indefinitely before sowing, provided that it is thoroughly dried before being rebagged. Indeed, the germination of pickled seed that has been allowed to dry and is kept for some time is usually greater than if the seed is sown soon after pickling.

Controlling "Bunt" by Formalin.

Another liquid used fairly largely in Australia as a preventative against "bunt" is formalin. This to be effective should be at least a ¼ per cent. solution, *i.e.*, 1lb. of commercial formalin in 40galls. of water. When this substance has been used the grain should be sown when still damp immediately after pickling; if allowed to dry, it should not be sown for at least a fortnight, or if it becomes necessary to use the seed before that time is up it should be thoroughly wetted with water. Once grain pickled with formalin has become dry its germinating power gets less for a week, but after that time it gradually improves until one month after treatment. Formalin is a solution of a colorless gas in water, so that it is easily adulterated. In commercial formalin this should be a 40 per cent. solution of formaldehyde gas in water, but some formalin supplied to farmers at Nhill one year on analysis only showed 20 per cent. formaldehyde. Formalin is an effective pickle when guaranteed material is used and when ordinary care is taken, but because of its liability to adulteration and the need of immediately sowing the grain, bluestone at the present is the more reliable of the two.

2. "TAKE-ALL" (*Ophiobolus graminis*).

Besides the presence of "bunt," too much "take-all" was to be seen in many crops in the district, some of them being quite as badly affected as is expected in a number of our newer mallee districts, where the disease usually does much damage, whilst a large proportion of the crops showed patches that were affected. When properly understood, this disease can be fairly well controlled, and, as the damage done by it is very considerable, every effort should be made to keep it in check.

The disease is a fungus growth living on, and so affecting, the young wheat plants, and should rather be known as "wheat-stem killer" than "take-all," as it mainly affects the bases of the stems of the wheat plant, and when present to any great extent is so severe on the plants that they only grow a few inches high before dying back. In the field it affects patches of the wheat crops, and can be recognised by the affected patches being more or less circular in shape, with their centres quite bare, and the plants in the diseased circle gradually improving until the healthy plants on the edge of the ring are reached. The affected plants are usually recognised by the fact that the bottom 2in. or so of the stems is more or less covered with a brownish powder, or at all events is stained a brownish color. This latter means of recognition is of importance to the farmers, as the affection of the wheat with which this disease is most often confounded is the result of climatic action, and usually spoken of in this State as the "blighting off" of the wheat crop.

It has been the experience of most farmers, especially in low rainfall areas, that once a field has been affected with "take-all," if wheat be grown there as the next crop, even on fallow, it will be affected by the disease, and very possibly have a worse attack than the previous crop; also, that unless something be done to check the disease wheat-growing will have to be given up on that particular land for a time, and some other crop grown.

Infection of Wheat Crops by "Take-all."

As this parasitic fungus lives on the base of the stems and roots of the wheat plant, and as the badly affected plants do not produce heads of grain, the chances are that the grain harvested from affected crops and used for seed the following year is not affected with the spores of the disease. The infection of the crops is most likely brought about in the soil, more particularly from the stems of the plants that are buried when the soil is being ploughed.

Preventative Treatment for "Take-all."

(1) As the straw left after harvesting an affected wheat crop is the most likely means of infection, the first step in the eradication of the disease should be the burning of the stubble. This will actually burn much affected material, and in places at least will kill many spores on the underground stems and roots by the heat generated.

(2) As the fungus has been found on many of the plants that are usually found growing on our wheat lands, properly working the fallows and keeping them free from all weeds will tend to reduce the disease.

(3) One crop that will grow more or less well wherever wheat can be grown well—the oat crop—is but seldom, and then never badly, affected by this disease. This being so, when the wheat crops are affected the disease can be checked on that land by the growing of oats instead of wheat for a few seasons, especially if this is done on well-worked fallow land. The oats, not being readily attacked by the fungus, tend to starve it out of the land.

CATERPILLAR

TRACTORS.

Agery, September 9th, 1922.
Messrs. Vrai Limited, Torrensville.
Dear Sirs,

We have tested the T-35 ''Caterpillar'' here, and find we can plough 14¾ acres 3in, deep on hard soil, on a fuel consumption of 12galls. of kerosene and ½pint of petrol.

(Signed) H. CADD & SONS,
Per H. H. Cadd.

This test was run for a period of 5 hours 27 minutes on kerosene, and gave a result of 1s. 10d. per acre for fuel, oil, and grease.

THERE IS ONLY ONE "CATERPILLAR." HOLT BUILDS IT.

There is a "Caterpillar" model for every job. May we send you particulars?

VRAI LIMITED, TORRENSVILLE, Sole Agents.

(4) Until the fungus causing the trouble was isolated a few years ago it was usual, in this State, at any rate, to consider the disease as being a mechanical one. It is not long ago that a common saying amongst farmers was, "Late fallow brings 'take-all'," and also "Ploughing in a lot of straw or rubbish brings 'take-all'." These two things—late fallow and ploughing in much straw—certainly appear to encourage the disease, so much so that I personally believe that the holding of the disease in check depends more on the mechanical condition of the soil than on anything.

The reason that late fallow and ploughing in much straw encourage the "take-all" disease appears to rest on the fact that in most seasons they do not tend toward soil conditions ideally favorable to the growth of wheat, particularly when the wheat is in its earlier stages, when the disease is most active. From studying the disease for some years now, I am convinced of the fact that even in soil more or less badly infected with this disease, if the wheat crop gets a really good start and continues in good healthy growth, there will be hardly any evidence of the trouble. This healthy growth depends very largely on the soil being in good mechanical condition, and late fallow and much dry organic matter in the soil as a rule by no means give mechanical condition good enough to promote this growth. In its simplest form the ideal seed bed for wheat consists of soil that has been ploughed up and then so worked that only the immediate surface, 1½in. or so, is loose, and the soil immediately under it firmly compacted together. It is in a seed bed such as this that wheat will give its best yields, other things being equal, and I feel quite convinced that if seed beds like that described were always attained, we would hardly know what "take-all" is. In the ordinary operations of bare fallowing, obtaining this seed bed is one of our main objects, even if it is done in most cases unconsciously; and if the land is ploughed early, the rains that fall compact the under surface by running the particles together, and we cultivate the surface of the land to keep it free from strong crusts and from weeds. These operations get us somewhat near the ideal seed bed. But in the case of late fallow the ploughing is usually done after the heavy rains of the year are finished, and so not enough rains fall throughout the time between ploughing and seeding to compact the under surface soil. This leaves the soil, as it also does when a large bulk of organic matter is ploughed in, with more or less large spaces in the under layers, which, when the roots of the wheat plants reach them, naturally give a check to the growth of the plants; and, unfortunately, to make it worse, this check to the plants comes just at the time when the fungus is most active and when the wheat plants are weakest. In all land that is cleared, *i.e.* free from stumps, the producing of good mechanical condition of the soil or an ideal seed bed for wheat can be brought about by the use of land rollers. As this disease spreads, the use of rollers is becoming more necessary, and instead of depending so much on the rains that fall after the seed is in the soil to compact it together, as is the common practice at present, rolling the land will become just as important and necessary an operation as is harrowing. In practically all seasons a heavy rolling of the land is advantageous, but it is an essential operation when rains sufficiently heavy to compact the soil have not fallen on the fallowed land.

3. Flag Smut (*Urocystis tritici*).

A very considerable amount of this disease was noticeable throughout the district, and one crop inspected was so badly infected that at least 5 per cent. of the plants would not produce grain.

This is often incorrectly known as black rust, but is essentially a smut, and not a rust. Here the fertile branches are produced in the leaves and sheath of the wheat plant, and the disease is characterised by the appearance on the leaves of long, bluish-black lines, more or less parallel to one another, and the leaves become very much twisted and curled. These lines contain a black powder, which, to the naked eye, is very similar to the other smuts. The disease usually appears when the plants are young, and generally keeps them so weak that they are unable to produce heads. The damage done is often fairly great in this State, but the cause of the reduced yield is not always recognised until pointed out, as the diseased plants have broken down by harvest time, and are not readily seen unless particularly looked for. This damage is solely reduced yield through the disease preventing the plants from producing grain.

Infection of Wheat Crops by Flag Smut.

As this fungus disease affects the leaves of the young wheat plant, and rarely allows it to come into ear, the chances are that infection comes in every case through the medium of the soil, by spores dropping into the earth and by the affected stalks and leaves being ploughed in at fallowing time. And as these spores will pass through animals and remain alive, infection will come from the manure of animals eating affected straw or chaff.

Preventative Treatment for Flag Smut.

Where this disease is found to be present to any great extent, the first operation of a preventative nature should be the burning of the stubble. This will directly destroy a very large number of the spores, and will leave the land so free from rubbish that good, close fallow should result. Fields affected should be fallowed as early as possible, which will possibly lead to the germination of the fungus spores, and they will die for want of a host plant.

Fields affected should not be sown early; indeed, they should not be sown until some time after the first autumn rains, for it has been found that wheat sown early is always affected to a greater extent than that sown late in the same field. Change of crop must be practised in places where the disease has appeared, as the growing of wheat after wheat encourages the trouble.

Some varieties are more liable to attack than others, so resistant ones should always be chosen when once this fungus has been noticed.

4.—The Introduction of Bad Weeds with the Seed.

Quite a large proportion of the wheat crops seen contained barley, and many also had a fair sprinkling of drake. These are two very bad weeds, for not only do they grow as strongly as do the wheat plants, and so replace some of the crop, but at the same time the presence of barley grain and drake seed in the wheat to be marketed reduces the price that can be obtained. Where land is bare fallowed it is quite a rare occurrence for either barley or drake seed to remain in the soil for 12 months without germinating, and so their presence in a crop is usually accounted for by the fact that the seeds were sown with the wheat. This trouble can be overcome by only using seed taken from "clean" crops, and, failing this source, grading the seed will remove all drake and considerably reduce the amount of barley. Grading not only reduces the proportion of weed seeds, but it is found to increase the yields of crops very considerably, and is quite a business proposition, costing somewhere about 9d. per bushel to grade (including the difference in price received for wheat that is removed), and can be depended upon to increase the returns by 2bush. to 3bush. per acre, on the average.

5. The Growing of Badly "Mixed" Wheats.

For seed purposes it is, of course, quite essential that each variety of wheat grown be true to type, and, although this does not apply with the same force for ordinary "market" wheat, particularly if the admixture consists of varieties with the same maturing period as the main crop, it is really bad practice to have mixtures of different classes of wheats. It was by no means an uncommon sight to see such "mixed" crops, and quite away from the possibilities of increased money returns from selling the crops as seed, an improvement in yields would follow the taking of more care with the seed to be sown.

6. Unsuitable Varieties.

It is generally recognised nowadays that certain types of wheat prefer and give better returns in special classes of soil, and where the soil conditions vary as they do in this particular district, more notice should be taken of this fact. In this connection it is known that in typical South Australian calcareous conditions, *i.e.*, limestone soils with comparatively low average rainfall (14in. to 18in.), the type of wheat giving best average returns consists of those varieties with tough, more or less willowy straws, and tough, shiny chaff, and where these conditions obtain the following varieties should improve the yields:—

Caliph
Currawa
Sultan
Felix
Ford
Late Gluyas
Leak's Rustproof
Walker's Wonder
King's Red or King's White.

In heavier textured soils not supplied with an excess of lime, and having an average annual rainfall of 16in. to 20in. or more, the stiffer strawed, more flaggy wheats, with softer chaff, give better grain yields, without the same tendency to lodge as happens with some of the above-mentioned varieties, and for these conditions the following varieties are recommended:—

Federation
Onas
Minister
Major
Marshall's No. 3
Currawa
Yandilla King
Caliph.

7. Increasing the Amount of Seed.

In South Australia it is found that when soils are first brought into cultivation they are comparatively free from weeds, and whilst this is so, 30lbs. to 50lbs. of seed wheat per acre is ample to give maximum grain yields, but as the cropping is continued the land quickly becomes weedy, and to keep these in check it soon becomes necessary to increase the seed used. This providing of plenty of plants of the crop you wish to grow is often lost sight of as the best means of controlling the weeds by smothering them, and, in those seasons where weeds cannot be properly killed on the fallows, the addition of 10lbs. to 20lbs. of seed to the ordinary amount used per acre generally gives markedly increased yields.

8. Increasing the Amount of Fertiliser.

In the great bulk of South Australia, including this particular district, the minimum application of 36 per cent. superphosphate should be 1cwt. per acre, and the chances are that in these soils it would still be a business undertaking to increase this dressing to 1½cwts. per acre.

9. The Presence of "Eelworms."

Recently the attention of the Department of Agriculture was directed to some unknown trouble affecting some of the cereal crops of the Maitland district. It seems certain that a nematode worm ("eelworm") was responsible for the damage done, and Mr. O. W. Teigs (Lecturer in Zoology, Adelaide University) thinks that this particular nematode is *Heterodera schachtii* (the beet "eelworm"). Where this trouble occurs the following method of control might be practised with advantage:—

1. Rotate all crops grown as:—
    - (*a*) Bare fallow — wheat — pasture—bare fallow—oats—pasture; or
    - (*b*) Bare fallow — wheat — barley — pasture—bare fallow—barley—oats; or
    - (*c*) Bare fallow — wheat — barley — pasture—bare fallow—oats—barley—pasture.
2. Burn the stubble of affected crops.
3. Plough or cultivate the land as soon after burning as is possible.
4. Cultivate the land as much as possible during the remainder of the hot weather.
5. Treat the land as 15-months fallow, and keep it absolutely free from weeds of all kinds with sheep and cultivator during the whole period.
6. Give the land plenty of exposure during the summer.
7. Make quite certain that the land is well compacted together before seeding, and if necessary give a heavy rolling to do this.
8. Use 1cwt. of 45 per cent. superphosphate per acre with wheat crops.
9. Sow late in preference to early seeding.

NARACOORTE AND KYBYBOLITE BRANCHES OF THE AGRICULTURAL BUREAU.

SEVENTH ANNUAL FARM COMPETITIONS.

Under the following Committee of Management:—Messrs. S. H. Schinckel, F. A. Holmes, J. Donoghue, J. M. Wray, A. B. Feuerheerdt, E. S. Alcock (Naracoorte Branch); L. S. Davie (Chairman), A. Bradley, S. Shepherd, H. B. Schinckel, and L. J. Cook (Hon. Secretary) (Kybybolite Branch).

[By W. J. Spafford, Superintendent of Experimental Work.]

For the seventh successive year a committee, composed of members of the Naracoorte and Kybybolite Branches of the Agricultural Bureau, has conducted farm competitions for residents of the two districts. In districts possessed of the particular natural conditions which prevail here, the addition of a class for improvement to pastures is a decided step in the right direction, and the number of entries received for this class clearly shows that the farmers of the district appreciate the decision of the committee of management. Other than this addition, the classes open for exhibition are similar to those of previous years and in most cases were fairly well supported.

CONDITIONS.

The following conditions were laid down to govern the competitions:—

1. The competition shall be open to all persons farming or residing within the radius of the boundaries of the District Council of Naracoorte.
2. Entries in writing, and accompanied by necessary fee, must be lodged with the Hon. Secretary of Farm Competitions, Kybybolite, not later than Saturday, October 7th, 1922, for all classes except Nos. 1 and 8, entries for which close on Saturday, September 23rd, 1922.
3. All entries to be made in the name or names of the *bona fide* owners of the property entered for competition.
4. The judging will take place about the middle of November, 1922, for all classes excepting sheep, which will be judged in the wool as soon as possible after the entries close, and the decision of the judges shall be final.
5. Competitors will be required to accompany the judges, and, if necessary, also drive them around the property entered for competition, and also to answer any questions bearing upon the same which may be put to them by the judge.
6. Where share farmers compete, the person who does the work receives the prize.
7. No third prize will be allotted unless four entries are received for a class, and no second prize will be allotted unless three entries are received.

CLASS I.—BEST WORKED AND MANAGED FARM.

First prize, cup or trophy (including £5 5s. presented by L. DeGaris, Esq.), to be competed for, and won three times by the same competitor, each winner's name to be engraved on the trophy. Second prize, £3 3s. (presented by Cresco Fertilisers, Ltd.). Third prize, £1 1s. Yearly entrance, 5s.

The judging for the best worked and managed farm will be done by the point system, from a commercial point of view, and to the following standard:—

1. System of cropping, including cultivation, rotations, manures, growing crops, summer crops, and fallow	100
2. Most profitable class of stock on the farm, advantage being given to breeders (horses, sheep, cattle, pigs, and poultry)	100
3. Implements and machinery suitable for the farm	40
4. The general care of implements, harness, and farm equipment	25
5. System of boundary and divisional fencing, including gates, sheep, horse, and cattle yards	40
6. System for conveying surplus surface water from the farm land	15
7. The provisions for fodder	40
8. Watering stock and water supply	40
9. Time and labor saving appliances and methods	10
10. Arrangements of dwellings and outbuildings	25
11. Plan and upkeep of orchard, vegetable, and flower gardens, and other plantings for beautifying the homestead	20
12. Afforestation or shelter breaks	30
13. Experimental work of any kind conducted	15
14. Discretionary points allowed by judge	50
Total	550

No entries received this year.

CLASS II.—MOST IMPROVED AREA OF PASTURE.

First prize, half a ton ground rock phosphate (presented by Arthur H. Hasell, Esq.). Second prize, £1 1s. (presented by S. Shepherd, Esq.). Third prize, 10s. 6d. (presented by J. M. Wray, Esq.). Entrance fee, 2s. 6d.

The improvement of natural pasture is of the utmost importance in the Naracoorte and neighboring districts, so the inclusion of this class in the farm competitions was a very wise proceeding on the part of the managing committee. The number of entries received was fairly considerable, and after the withdrawals, following on the heavy feeding of some plots originally entered, seven fields were judged. Although the judging of pasture fields, with the object of saying which one is the best, would not be at all difficult, the deciding which pasture shows the most improvement on the "natural pasture" of a particular block of land, in a district where the soil types show considerable variation, is far from easy, and to do this the following arrangement has been adopted:—

1. *Quantity of feed in pasture* will always be of the greatest importance, and so 35 per cent. of the marks were allowed for this.

2. *Type of plants present* is of consequence, because although many plants are eaten by livestock, some are of much higher feeding value than are others, and so 15 per cent. of the marks are allotted here.

3. *Quality of feed* has much to do with the value of any pasture, for luxuriant, over-rank plants have much lower palatability and total feeding value than dense, medium-height plants of the same kind, so 10 per cent. of the marks are used for this.

4 and 5. *Freedom from useless plants and general care of pasture* have each been allotted 5 per cent. of the total marks.

6. *Improvement to natural pasture* is very difficult to arrive at, because (*a*) some types of soil exist in comparatively small patches surrounded by large areas of a very different kind of soil; (*b*) all fields of some farms have been cultivated and cropped with dressings of fertilisers for long periods of time, with the inevitable destruction of all "natural pastures" for comparison purposes, but for the purpose 25 per cent. of the marks were allowed.

7. *Area of the pasture submitted* has been allotted 5 per cent. of the marks, because it is more creditable, and at the same time more difficult, to improve a large area than a small one.

The seven pastures submitted for judging have been given the following points:—

Name and Address.	Quantity of Feed.	Type of Plants.	Quality of Feed	Freedom from useless Plants.	General Care.	Improvement to Natural Pasture.	Area of Block.	Total.
	35	15	10	5	5	25	5	100
J. M. Wray, Hynam	32	12	7	4	4	17	2	78
E. C. H. Schinckel, Kybybolite	28	12	8	4	4	17	3	76
A. H. Bradley, Kybybolite	26	12	8	4	4	17	2	73
E. C. H. Schinckel, Kybybolite	19	9	6	3	3	19	5	64
J. M. Wray, Hynam	17	9	6	3	3	21	5	64
A. H. Bradley, Kybybolite	22	8	6	3	3	16	2	60
L. S. Davie, Kybybolite	18	7	5	4	4	15	5	58

THE PASTURES EXHIBITED IN CLASS II.

1. *Mr. J. M. Wray* (6 acres).—This field was seeded with Wimmera rye grass at the rate of 10lbs. seed per acre, and at the time of judging was a dense mass of growth about 2ft. high, containing practically no useless weeds, except a few "spear" thistles. Of plants other than rye grass there were but few besides hop clover, woolly clover, and cluster clover, the latter being present to the greatest extent. Although this rye grass has not such a high feeding value as some other fodders which can be successfully grown in the district, the general freedom from plants of low feeding value kept the points allotted for "type of plants" and "quality" fairly high. The block of land is part of a "wet" flat, which naturally grows fair feed, so marks for "improvement" are not so high as have been allotted to much weaker pastures on poorer soils.

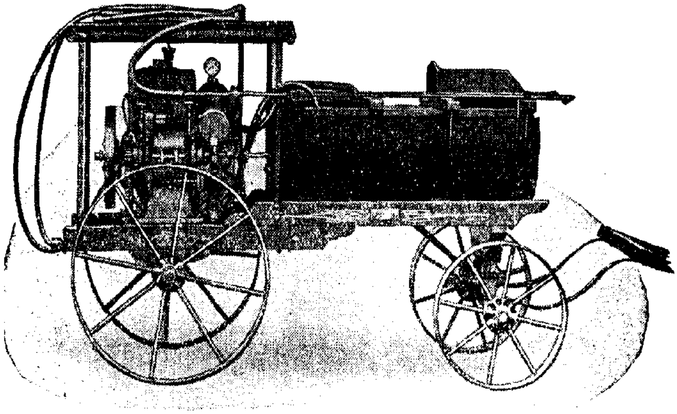
2. *Mr. E. C. H. Schinckel* (10 acres).—This field was seeded with subterranean clover at the rate of 1lb. of seed per acre, and where the clover is established the feed is really good, but patches throughout the block have only the plants common to the district on them. Cluster clover, hop clover, woolly clover, silver grass, sorrel, and a little brome

FRUITGROWERS & PASTORALISTS

METTERS'

Nufrend Spraying Outfits

Are manufactured entirely in our works, and can be supplied to fill the requirements of the small grower as well as the largest requirements.



ILLUSTRATING OUR TYPE B. POWER OUTFIT.

ALL PARTS OF PUMP ARE STANDARDIZED AND MANUFACTURED IN METAL TO RESIST ACID COMPOUNDS.

CALL AND INSPECT, OR WRITE FOR COMPLETE ILLUSTRATED CATALOGUE, POSTED TO ANY ADDRESS.

METTERS, Limited,
142, RUNDLE STREET,
ADELAIDE.

SPECIAL NOZZLE FOR BLOW-FLY PEST.

grass were in evidence. The land is of fair quality, and so would carry moderate feed in most years. Although much of the land was covered with subterranean clover, a heavier seeding would have insured a full stand and a really first-class pasture.

3. *Mr. A. H. Bradley* (6 acres).—Subterranean clover was sown in this field, and although most of the land is covered with this clover, a fair quantity of other plants were present, the following being in evidence:—Hop clover, cluster clover, brome grass, small hair grass, sorrel, and a little oats. Thicker seeding of the subterranean clover would have led to the elimination of the plants of low feeding value and the production of more high-class fodder. The land of this plot is of fair quality, so did not receive very high marks for "improvement."

4. *Mr. E. C. H. Schinckel* (32 acres).—A half-pound of subterranean clover was seeded to the acre on this plot, and with such a very light seeding the stand of this clover was naturally very patchy. Hop clover, woolly clover, cluster clover, brome grass, sow thistles, silver grass, and sorrel were very plentiful, but as this block is naturally poor pasture land the entry received fairly high marks for "improvement." The growth made by the subterranean clover patches are a sure indication that really good pasture can be made of this type of country, providing that sufficient seed and phosphate are used.

5. *Mr. J. M. Wray* (40 acres).—This block was seeded with 1lb. subterranean clover per acre, and although the clover stand is very irregular, its presence has made a wonderful difference to the grazing capacity of the block. Naturally this land is extremely poor pasture land, only growing scattered and stunted plants of brome grass, hop clover, and woolly clover, with plenty of sorrel and many asters, but where the clover is established, quite fair growth has been made, to the exclusion of the useless plants, and the reduction of those only producing comparatively poor feed. Of all plots judged, this one showed most improvement, altering the pasture from "almost valueless" to "fair." A heavier seeding of subterranean clover and the application of more phosphate would have improved this still more.

6. *Mr. A. H. Bradley* (4 acres).—This block consisted of land that has been cleared for some years, but has never been cropped, and this year 1cwt. superphosphate per acre was given as a top-dressing. The land carries fair feed naturally, but it is now very well covered with a mass of plants, although it has every appearance of having carried stock for a very long time. The plants most in evidence consist of hop clover, woolly clover, silver grass, sorrel, and some wallaby grass. Top-dressing pastures with light dressings of phosphates must be done annually, or very heavy dressings used occasionally, if great improvement is to be made, and then some years elapse before a marked change in the type of plants present takes place, and if Mr. Bradley continues the top-dressing of this field he should see a progressive improvement.

8. *Mr. L. S. Davie* (30 acres).—This land has received no special treatment, and the improvement to the pasture depends on the cultivation and cropping, with dressings of superphosphate, in years gone by. At time of judging the plants comprising the pasture consisted mainly of hop clover, cluster clover, woolly clover, self-sown oats. Cape

weed, small hair grass, sorrel, and a little burr clover, and had every appearance of having provided a lot of feed for weeks past. In fair feed land like this is, really good pasture could be made by seeding with subterranean clover and Wimmera rye grass.

CLASS III.—BEST GROWING CROP OF WHEAT.

East Naracoorte Range. Area at least one-fifth of total area of wheat sown on the farm, but not less than 25 acres. First prize, ½ ton Top Special high-grade super (presented by the Adelaide Chemical and Fertiliser Co., Ltd.). Also first and second prizes, certificates. Entrance fee, 2s. 6d.

From a farmer's point of view, the main consideration in wheat-growing is to produce crops returning the greatest amount of grain per acre, and to get the full market price for the grain when harvested, and in judging wheat crops these requirements must have first place. On this plan the apparent yield will be the most important subdivision, and must carry the most of the points to be allotted, and, as diseases are the main cause of decreased prices, freedom from them will be next in order of importance, and added to these subdivisions must be others showing trueness to type and freedom from weeds. The four crops submitted for judging have been given the following points:—

Name and Address.	Variety.	Apparent Yield.	Freedom from Disease.	Trueness to Type.	Freedom from Weeds.	Total.
		60	20	10	10	100
S. Sheppard, Kybybolite	Federation	40	12	8	7	67
J. M. Wray, Hynam	Federation	32	13	8	9	62
L. S. Davie, Kybybolite	White Tuscan	32	12	8	7	59
H. Thompson, Wild Dog Valley	Currawa Federation	28	10	7	7	52

THE CROPS EXHIBITED IN CLASS III.

1. *Mr. S. Sheppard* (Federation).—This crop was somewhat irregular owing to patches being excessively wet earlier in the year, but on the whole should prove a "grainy" crop. Of weeds, Wimmera rye grass, sow thistle, slender thistle, hop clover, and a little subterranean clover were in evidence. "Take-all" added to the irregularity of the crop, and loose smut was in evidence.

2. *Mr. J. M. Wray* (Federation).—There were not many weeds in this crop other than sorrel, with some brome grass and hop clover, and a little wild oats. Some "Take-all" and loose smut further reduced this comparatively light crop.

3. *Mr. L. S. Davie* (White Tuscan).—A rather irregular crop, showing excessive wet in places, whilst other patches were really good. Weeds were fairly plentiful as:—Hop clover, juncus, drake, hedypnois, and sow thistle. "Take-all" and loose smut had taken their toll of the crop.

4. ***Mr. H. Thompson*** (Currawa and Federation).—A comparatively light crop, fairly weedy with melilot, slender thistle, hop clover, and some barley grass. Really badly affected with "Take-all."

CLASS IV.—BEST GROWING CROP OF WHEAT.

West Naracoorte Range. Area at least one-fifth total area of wheat sown on farm, but not less than 25 acres. First prize, ½ ton high-grade super, 45 per cent. (presented by Wallaroo-Mount Lyell Fertilisers, Ltd.). Also first and second prizes, certificates. Entrance fee, 2s. 6d.

Seven entries were received in this class, and have been allotted the following points:—

Name and Address.	Variety.	Apparent Yield.	Freedom from Disease.	Trueness to Type.	Freedom from Weeds.	
		60	20	10	10	100
J. Neagle, Morambro	Currawa	48	16	8	8	80
H. McEachern, Stewart's Range	Federation	47	15	8	8	78
J. Donoghue, Naracoorte	Federation	41	13	8	8	70
G. Gartner, Naracoorte	Federation	36	15	6	9	66
Smith Bros., Morambro	Federation	35	14	7	7	63
G. Ricketts, Morambro	Federation	35	12	8	8	63
J. Williams, Lochaber	Major	31	12	8	8	59

THE CROPS EXHIBITED IN CLASS IV.

Mr. J. Neagle (Currawa).—A very nice crop, fairly regular, and not containing very large numbers of weeds, although sheep weed, melilot, and few wild oats were in evidence. Only a small amount of "Take-all" was present, and a little loose smut.

Mr. H. McEachern (Federation).—Where "Take-all" was absent this was an extremely good crop, but contained slender thistle, saffron thistle, and wild oats.

Mr. J. Donoghue (Federation).—A few weeks before judging this must have been a beautiful crop, but at the time of inspection "Take-all" had made parts of the crop very irregular and patchy. The main weeds present consisted of spear thistle, slender thistle, melilot, and sheep weed.

Mr. G. Gartner (Federation).—This was a very clean crop, containing very few weeds of any kind except trembling grass. Many patches affected with "Take-all" were present.

Messrs. Smith Bros. (Federation).—This crop appears to be grown on stubble land, and the portion of it sown on wheat stubble was badly affected by "Take-all" whilst that on oat stubble was practically free from the disease. Of the ordinary weeds, saffron thistles, oats, and sheep weed were very noticeable.

Mr. G. Ricketts (Federation).—This crop was really good where "Take-all" was absent, but much of the block was diseased. The ordinary weeds of the district were not very plentiful, and on the whole the crop was clean, except for patches of melilot.

Mr. J. Williams (Major).—Poppies, slender thistle, and hard grass were in evidence, and much "Take-all" and some loose smut helped to spoil the crop for competition purposes.

CLASS V.—BEST GROWING CROP OF OATS.

East Naracoorte Range. Area at least one-fifth of total area of oats sown on farm, but not less than 25 acres. First prize, £1 1s. (presented by Clutterbuck Bros., Ltd.). Also first and second prizes, certificates. Entrance fee, 2s. 6d.

Oat crops, from a grower's point of view, must produce heavy yields of grain or hay, and stand up well enough to be harvested without a great deal of trouble, and from the buyer's viewpoint must be free from bad weeds and diseases, and so the judging of these crops has been done on these lines, giving most points to the more important subdivision of probable yield.

This particular season did not prove to be a very suitable one for the oat crops of the Naracoorte district, and as a consequence only two crops were left in this class, and they have been marked as follows:—

Name and Address.	Variety.	Apparent Yield.	Freedom from Disease.	Trueness to Type.	Freedom from Weeds.	Standing.	Total.
		60	10	10	10	10	100
P. A. Laurie, Kybybolite . . .	Algerian .	48	9	10	8	7	82
E. L. L. Staude, Kybybolite . .	Algerian .	44	9	10	7	8	78

THE CROPS EXHIBITED IN CLASS V.

Mr. P. A. Laurie.—This was a very nice crop of oats, being fairly regular, comparatively free from barley, wheat, drake, and from all diseases except loose smut, but contained Cape weed, silver grass, and juncus, and was rather inclined to lodge.

Mr. E. L. L. Staude.—Also a very fine crop of oats for the season, being fairly regular, comparatively free from barley, wheat, drake, and from all diseases except loose smut, but contained Cape weed, hop clover, woolly clover, a little juncus, and subterranean clover.

CLASS VI.—BEST GROWING CROP OF OATS.

West Naracoorte Range. Area at least one-fifth of total area of oats sown on farm, but not less than 25 acres. First prize, £1 1s. (presented by J. Donoghue, Esq.). Also first and second prizes, certificates. Entrance fee, 2s. 6d.

Only three crops of oats were submitted to judging in Class VI., and have been awarded the following marks:—

Name and Address.	Variety.	Apparent Yield.	Freedom from Disease.	Trueness to Type.	Freedom from Weeds.	Standing.	Total
		60	10	10	10	10	100
J. Donoghue, Naracoorte	Algerian	50	9	10	8	8	85
H. McEachern, Stewart's Range	Algerian	47	9	10	6	7	79
W. McIntosh, Moy Hall	Algerian	33	6	10	6	8	63

THE CROPS EXHIBITED IN CLASS VI.

Mr. J. Donoghue.—A very good, even crop, containing a few spear thistles, some sheep weed, and wild oats. A heavy crop, which at the time of judging was still standing well.

Mr. H. McEachern.—A good crop, but a little patchy, the oats in the hollows being heavy and badly lodged. About one-third of crop rather badly mixed with barley, and the whole crop containing slender thistles.

Mr. W. McIntosh.—A very patchy crop, the parts on the banks being really good, but in the hollows is badly affected by some trouble, which appears to be caused by attacks of eel worms. Of weeds, slender thistle, sheep weed, some wild oats, and some turnips are in evidence.

CLASS VII.—BEST HERD OF COWS.

All on the farm to be shown, but not less than five. Preference to breeders. Prize, cup or trophy. To be won twice by the same competitor. Each winner's name to be engraved on the trophy. Yearly entrance, 5s.

As milk production is the object in keeping cows, most of the points have been allotted for this, and as the judging was not done on records, the 70 points for this was divided into 50 for appearance for milk, and 20 for care of animals; the remaining 30 points were allotted for size of herd, suitability of type to district, and purity of breed. The result of the judging is as follows:—

Name and Address	Breed.	No. of Cows	Appearance for Milk.	Care of Cows.	Suitability of Type.	Purity of Breed.	Size of Herd.	Total
			50	20	10	10	10	100
A. G. Chamberlain, Naracoorte	Pure-bred Jersey	11	43	19	10	10	8	90
J. M. Wray, Hynam	Very high-grade Jersey, almost pure	12	43	17	10	9	9	88
S. Sheppard, Kybybolite	Six grade Jerseys, one grade Hereford	7	35	16	9	7	6	73

The Herds Judged in Class VII.

Mr. A. G. Chamberlain.—This pure-bred Jersey herd consists of cows of high quality, and has every appearance of the greatest of care being taken with the animals, for at the time of judging every cow was in first-class order.

Mr. J. M. Wray.—Four young heifers of good quality were included in this herd of very high-grade Jerseys, but two of these were still rather rough in the coat at judging time.

Mr. S. Sheppard.—This is quite a good herd of cows for a mixed farm, the animals being a good deal above the average farmer's cows, and included four rather promising heifers, but at the time of inspection were a trifle rough in appearance.

Class VIII.—Best Flock of Merino Sheep on a Farm.

(60's or finer quality wool.)

To be judged on commercial value. All the sheep to be shown to the judge's satisfaction. Preference to breeders. First prize, cup (£5 5s. presented by James Allen, Esq.), to be won twice by the same competitor, each winner's name to be engraved on the cup. Also, first and second prizes, certificates. Yearly entrance, 5s.

Unfortunately only one entry was received in this class, and when the exhibitor knew the position he withdrew his flock. Sheep are of the utmost importance in the district, and a number of good flocks are kept by various farmers, so it is surprising that plenty of competition was not forthcoming.

Classes 9 *and* 10.—Judged by H. H. Orchard (Instructor and Inspector of Orchards).

Class IX.—Best Kept Orchard and Vegetable Garden.

Any person whose income, other than private, is derived exclusively from fruit or vegetables is debarred from entering in this class. First prize, £1 1s. (presented by A. B. Feuerheerdt, Esq.). Second prize, parcel of seeds. Entrance fee, 2s. 6d.

Name and Address.	General Layout	Cultivation.	Pruning.	Spraying.	Freedom from Disease.	Variety and Selection.	Estimated Yield.	Total.
	15	25	10	5	20	15	10	100
W. F. Staude, Hynam	14	25	9	—	19	14	8	89
J. M. Wray, Hynam	13	15	9	5	18	12	9	81
H. Milne, Kybybolite	13	22	7	—	16	14	7	79
J. Neagle, Naracoorte	13	20	6	—	15	11	7	72

Layout.—No. 1—Good; 18ft. square system; varieties a little scattered; tagasaste breakwind will be an advantage when older. No. 2—Older trees crowded; planted 15ft. square; apricots planted too close to flower garden. No. 3—Sixteen feet square system; varieties scattered; almonds not well placed. No. 4—Trees not in alignment right through orchard; good plum tree break. Nos. 1 and 2 have adopted the better plan of planting vegetables distinct from the orchard.

Cultivation of No. 1 is excellent, and is a credit to the owner. No. 2 ploughed only. No. 3 good. No. 4 showed lack of cultivation amongst vegetables.

Pruning.—No. 1 has young trees trained rather high for a windy locality. No. 2 should leave two distinct buds on every spur left on vines. Both have good, well-shaped trees. No. 3 shows lack of pruning in previous years. No. 4, lack of pruning.

Spraying.—At this time of the year pip fruit trees should be sprayed with arsenate of lead as a preventive against codlin moth. Nos. 1, 2, and 3 did not spray because no moth was present last year.

Freeness from Disease.—Considering the season has been favorable for the development of fungoid diseases, their absence from the first two orchards is most creditable. No. 2 has an orange tree badly infested with the black olive scale. No. 3 has evidence of curl leaf, anthracnose on vines, and aphis on oranges. No. 4 has scab and shothole very bad on one apricot; curl leaf on peaches and nectarines; and trees show generally a lack of spraying.

Variety and Selection.—No. 1 has an excellent variety and selection of trees, giving a succession of fresh fruit; has also a good succession of vegetables, but not the variety that No. 3 has. No. 2 has a good succession of fruits, but not vegetables. No. 3 an excellent variety and succession of vegetables. No. 4 has apparently not given much attention to vegetables.

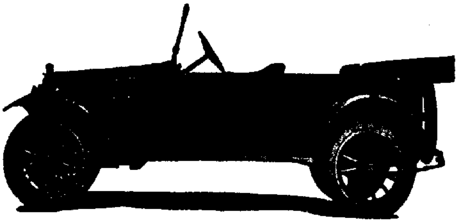
Estimated yield is largely controlled by the age of the trees.

Mr. Staude's orchard of a little over one acre in area is, in my opinion, equal to anything in the South-East, and will compare favorably with anything of its kind in the State.

CLASS X.—BEST FLOWER GARDEN.

Pot plants included. First prize, £1 1s. (presented by E. S. Alcock, Esq.). Second prize, parcel of seeds. Entrance fee, 2s. 6d.

Name and Address.	General Layout	Care and Attention.	Variety and Selection.	Pot Plants.	Total.
	30	20	30	20	100
J. Williams, Lochaber	29	19	25	19	92
F. Staude, Hynam	28	20	28	10	86
Miss Gould, Naracoorte	22	18	25	15	80
Mrs. T. Adams, Naracoorte	24	15	22	15	76



HUPMOBILE

HOW many miles to the gallon of petrol?—of oil? What tyre mileage? What repair cost per month?—These are pertinent questions which we invite you to ask of owners of all makes of motor cars, before buying a Hupmobile.

FULL PARTICULARS FROM

PHOENIX MOTOR Co., Ltd.,
112-120, PIRIE STREET, ADELAIDE.

Layout.—No. 1—Good; 18ft. square system; varieties a little scattered; tagasaste breakwind will be an advantage when older. No. 2—Older trees crowded; planted 15ft. square; apricots planted too close to flower garden. No. 3—Sixteen feet square system; varieties scattered; almonds not well placed. No. 4—Trees not in alignment right through orchard; good plum tree break. Nos. 1 and 2 have adopted the better plan of planting vegetables distinct from the orchard.

Cultivation of No. 1 is excellent, and is a credit to the owner. No. 2 ploughed only. No. 3 good. No. 4 showed lack of cultivation amongst vegetables.

Pruning.—No. 1 has young trees trained rather high for a windy locality. No. 2 should leave two distinct buds on every spur left on vines. Both have good, well-shaped trees. No. 3 shows lack of pruning in previous years. No. 4, lack of pruning.

Spraying.—At this time of the year pip fruit trees should be sprayed with arsenate of lead as a preventive against codlin moth. Nos. 1, 2, and 3 did not spray because no moth was present last year.

Freeness from Disease.—Considering the season has been favorable for the development of fungoid diseases, their absence from the first two orchards is most creditable. No. 2 has an orange tree badly infested with the black olive scale. No. 3 has evidence of curl leaf, anthracnose on vines, and aphis on oranges. No. 4 has scab and shothole very bad on one apricot; curl leaf on peaches and nectarines; and trees show generally a lack of spraying.

Variety and Selection.—No. 1 has an excellent variety and selection of trees, giving a succession of fresh fruit; has also a good succession of vegetables, but not the variety that No. 3 has. No. 2 has a good succession of fruits, but not vegetables. No. 3 an excellent variety and succession of vegetables. No. 4 has apparently not given much attention to vegetables.

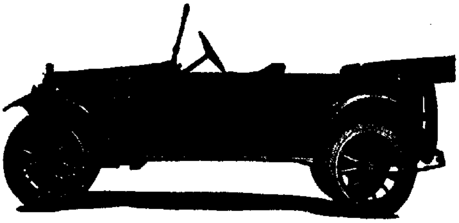
Estimated yield is largely controlled by the age of the trees.

Mr. Staude's orchard of a little over one acre in area is, in my opinion, equal to anything in the South-East, and will compare favorably with anything of its kind in the State.

CLASS X.—BEST FLOWER GARDEN.

Pot plants included. First prize, £1 1s. (presented by E. S. Alcock, Esq.). Second prize, parcel of seeds. Entrance fee, 2s. 6d.

Name and Address.	General Layout	Care and Attention.	Variety and Selection.	Pot Plants.	Total.
	30	20	30	20	100
J. Williams, Lochaber	29	19	25	19	92
F. Staude, Hynam	28	20	28	10	86
Miss Gould, Naracoorte	22	18	25	15	80
Mrs. T. Adams, Naracoorte	24	15	22	15	76



HUPMOBILE

HOW many miles to the gallon of petrol?—of oil? What tyre mileage? What repair cost per month?—These are pertinent questions which we invite you to ask of owners of all makes of motor cars, before buying a Hupmobile.

FULL PARTICULARS FROM

PHOENIX MOTOR Co., Ltd.,

112-120, PIRIE STREET, ADELAIDE.

No. 1.—Young garden; the layout is good, slightly raised diamond-shaped lawn in centre, with round central bed of violas—two colors; very effective. The general planting shows careful attention to details and effects, and the care and attention is excellent. The older portion of garden included has not received quite the same attention.

No. 2.—Rose trellises relieve this garden. Group effect of flowers good. Good selection of shrubs and succession of flowers. Care and attention excellent.

No. 3.—The various beds are somewhat scattered. Good selection of flowers, but beds are too crowded. Orange tree in centre of flower garden is not an advantage.

No. 4.—This garden has no standard roses and a fair area of lawn that might be relieved with a few standards. Effective showing of sweet peas against fence. Gardening tools lying on lawn.

GENERAL RECOMMENDATIONS.

This is the fourth consecutive competition which I have judged in this locality, and, in reporting on the previous ones, attention was drawn to various matters likely to improve the farming practices of the district.

In the *Journal of Agriculture* for January, 1920, the following points were mentioned:—

1. The scarcity of pigs.
2. The advantages of dairying.
3. The need of good rotation crops.
4. Heavier manuring of crops to improve the stock-carrying capacity of the pastures in years following.
5. Correcting excessive acidity by applications of lime.
6. Drainage of surplus surface water.
7. The overstocking of pastures.
8. The excessive feeding off of crops.
9. Extending the areas under peas.

In the *Journal of Agriculture* for January, 1921, it was pointed out that there were still ample evidences that the above points held good, and the following improvements were enlarged upon:—

10. Improving pastures with subterranean clover.
11. Subdivision of holdings.
12. Summer crops.
13. Cultivation.
14. Varieties of crops.

In the *Journal of Agriculture* for February, 1922, these were again referred to, and the following further improvements were discussed in some detail:—

15. The presence of "Take-all" in wheat crops.
16. The effects of superphosphate on pastures.
17. The presence of barley in crops.
18. Wimmera rye grass.

During this year's inspection of the district the outstanding features calling for remark appear to be:—

19. *The Great Havoc being played with Wheat Crops by "Take-all."*—Although methods of control for this disease have been published time and again in the *Journal of Agriculture* but little seems to be known about it by local farmers, and this despite the fact that enormous damage is being done to wheat crops all over the district. In a very brief summary the control of this disease is somewhat as follows:—

> Where "Take-all" has appeared (a) the stubble should be burnt; (*b*) some crop other than wheat should be grown on that block of land next time it is cropped; if cereals are to be grown, oats tend to starve out the fungus; (*c*) the land should be so cultivated that a good seed bed is secured there; an ideal seed bed is cultivated soil with only the immediate surface (say, 1½in.) loose and all the under layers well compacted together; (*d*) everything possible should be done to make the crop grow strongly in its early stages, and an increased dressing of superphosphate (to, say, 1½cwts. per acre) is most likely to do this at present.

20. *The Small Area under Pea Crops.*—In a district blessed with such a good climate the pea crop could be grown to great advantage, particularly on the soils of good quality, and it is surprising to see how little of this crop is grown. In the past the trouble and cost of harvesting have, of course, been the principal factors retarding the extension of the crop, but now that there is a machine which will directly harvest peas, these objections no longer hold good.

21. *The Need of Converting Many Crop-growing Farms into Livestock Farms.*—The many advantages possessed by the district favoring livestock farming, such as unlimited good water near the surface, plenty of timber for fencing, and almost ideal climate, particularly when they are added to the fact that many of the soils are not the best crop producers, should be realised by local farmers, but it does not seem to be the case, and the sooner livestock replace crops to be carted off the land, the better for many settlers, and so for the State.

The factors retarding rapid development in this direction appear to have been the want of fodder plants to replace the plants which follow cropping, and the lack of phosphoric acid in the soil, but it has now been proved by a number of local farmers that subterranean clover, providing it receives phosphatic fertilisers, will increase the livestock carrying capacity of the land two, three, or even four times what it becomes under ordinary cropping methods.

In many parts of the district subterranean clover seeded at the rate of 3lbs. or 4lbs. per acre, and dressed with 1cwt. superphosphate per acre annually, would considerably increase the returns secured from the farms. Wimmera rye grass is also doing well on all farms where tried in the district, and seeded with subterranean clover, or alone, makes a marked improvement to the grazing capacity of the land.

POINTS FROM THE CHAFF AND HAY ACT, 1922.

[By GEO. QUINN, Chief Inspector, Sale of Chaff and Hay Act.]

This Act repeals all previous Acts dealing with hay and chaff in South Australia. Its principal provisions apply to every "dealer" in chaff, who is described in the Act as "any person who carries on the business of dealing in, or of buying and selling chaff or hay, or of selling chaff, but does not include any farmer who buys and sells chaff or hay, or sells chaff wholly in the course of his business as a farmer, and not by way of retail trading."

"Hay and chaff" is defined as the chaffed stalks, leaves, and heads of any one or more plants of wheat, oats, barley, rye, lucerne, clover, pea, or other plant the Governor may at any time proclaim as suitable, but it does not include the chaff made from any cereal plant which had not grown to the flowering stages, or from which the natural grain or seed has been removed by any cause whatsoever.

Every "dealer" must, within 30 days of the passing of this Act (November 8th, 1922), or within 30 days of commencing business, give notice to the Chief Inspector of Chaff, at the office of the Minister of Agriculture, Exhibition Buildings, Adelaide, specifying (1) his Christian name and address, (2) the position of his business, and (3) whether he is a cutter or dealer only, or both.

A fine of 5s. per day for neglect may be imposed for every day the notice is proved to be overdue. If a dealer has previously given such notice under Chaff and Hay Acts repealed by this latest Act, a new notice is not necessary unless the location of his place of business has been changed. No charge is made for the registration of the abovementioned particulars.

No dealer shall sell, or suffer to remain upon his registered business premises, any chaff, other than hay chaff, unless each bag is conspicuously branded "straw chaff" in letters 1½in. high, and all chaff shall be deemed to be hay chaff unless branded in that manner. The keeping or selling of chaff containing any noxious weed or foreign ingredient is an offence unless the inclusion of such be provided for by regulations.

No chaff, if contained in bags, is saleable, or may be kept on the business premises if it holds more than 12½ per cent. of moisture, and the storing or sale of chaff, which is decomposing through the action of mould fungi, is an offence, as is also the use in chaff dealing of bags which have previously contained any fertiliser. The standard weight for a bag of chaff has been abolished, and all chaff must be sold by weight, and such weight shall include the weight of the bag containing the chaff, unless otherwise specially agreed upon between buyer and seller.

Every dealer, who sells any chaff or hay, shall give the purchaser a note setting out the full weight delivered, and, in the case of chaff, the number of bags in which it is contained. It is an offence to fail to

EFFICIENCY
ON THE FARM

For unfailing service, efficiency, smooth running and reliability, use

Shell Lubricating Oils

These Oils flow freely under all conditions, and yet are adhesive enough to maintain their body when exposed to great heat.

Shell Farm Oil

is a high quality, amber-colored, medium-bodied Oil graded scientifically for general bearing lubrication of lighter types of agricultural machinery

Stocks held by all Leading Storekeepers

The British Imperial Oil Co. Ltd.
ALL STATES AND
NEW ZEALAND

give such a weight note, or if such note is proved to be false in any material particular. No person is bound to accept delivery of any chaff or hay without such a weight note is presented on or before delivery.

Powers are conferred upon Inspectors to enter during the daylight upon any land, into any warehouse, store, shop, building, or other place where chaff is or may be reasonably supposed to be cut, bagged, kept, stored, or sold, and examine any chaff found, and on payment of ordinary market price therefor (if demanded) take any quantity of such chaff as a sample for analysis. Such samples must be drawn from at least ten (10) per cent. of the bags which contain the chaff under suspicion, and be immediately mixed and divided in three approximate equal parts, each of which is to be placed in a separate tin or jar and fastened securely. After labelling with the name of the occupier or person in possession of the premises, and the time and place of sampling, one part is left in his possession, another held by the Inspector, and the third utilised for analysis.

ORCHARD NOTES FOR SOUTHERN DISTRICTS.

[By C. H. BEAUMONT, Orchard Instructor.]

Fruit picking, jam making, preserving, and drying will be the main work this month. Most fruits are very light, so that extra care is necessary in handling to prevent damage.

All growers who have to dry any quantity of fruit should have an evaporator. Information as to how to build one can be had on application to the Department of Agriculture.

Only fruits of good size and quality should be used for drying; small or damaged fruits make an inferior product.

Keep a coat of arsenate of lead on apples and pears; it will protect the fruit from the late moths.

Budding should be continued. Use only healthy buds from proved trees.

Weather has been favorable for development of fungus pests, therefore guard against them. Use lime-sulphur solution on apples and pears; it may be mixed with the arsenate of lead. Use Bordeaux mixture on vines.

Growers of currants may make a temporary dryer or evaporator of their racks if they prepare them beforehand. Particulars of method can be had on application.

Pear or cherry slug is very prevalent. Spraying with arsenate of lead, as for codlin moth, will prevent this insect causing any damage. Where there are slugs in the tree, dust well with wood ashes or with dry slaked lime.

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR OCTOBER, 1922.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.		Butterfat.	
			Per Herd during October.	Per Cow during October.	Per Herd during October.	Per Cow during October.
			Lbs.	Lbs.	Lbs.	Lbs.
A	14·94	14·77	10512	703·61	482·35	32·39
C	30·48	27·29	26054	854·79	1009·62	33·12
E	14·94	10·39	7539	504·62	334·03	22·36
G	48·97	36·81	38310	782·32	1477·53	30·17
I	14·71	13·71	13855·5	941·91	491·87	33·44
J	20	12	7668·5	383·43	337·79	16·89
L	15·68	14·54	10084·5	643·14	439·80	28·05
M	20	12·23	8728	436·40	401·89	20·09
R	13	11·26	6867·5	528·27	304·75	23·44
T	10	8·45	5008	500·80	233·01	23·30
U	13·23	7·13	4070	307·63	177·74	13·43
W	7·45	6·42	4725	634·23	175·72	23·59
X	18·77	18·77	13547	721·74	593·50	31·62
Y	16	13·10	10765·5	672·84	478·98	29·94
Z	20	17·10	12708·5	635·43	556·01	27·80
Ieans	18·55	14·93	12029·53	648·68	499·64	26·94

OWS YIELDING 1,000GALLS. OF MILK OR 400LBS. OF BUTTERFAT DURING A LACTATION PERIOD.

Name of Cow.	Owner.	No. of Days.	Milk.	Butterfat.
			Galls.	Lbs.
ainbow	C. J. Morris, Monteith	319	1045·70	415·25
elle Donald of Riverdale	J. A. Halliday, Murray Bridge	292	1154·65	427·39
ay Queen of Riverdale	J. A. Halliday, Murray Bridge	295	1027·40	448·59
elba	J. A. Halliday, Murray Bridge	319	1086·45	434·51
avis of Riverdale	J. A. Halliday, Murray Bridge	255	1165·40	450·73
ecky	E. W. Mountstephen, Monteith	319	860·65	435·37
nama Dimond	J. A. Halliday, Murray Bridge	319	1384·80	534·43
elgium of Riverdale	J. A. Halliday, Murray Bridge	319	1163·40	448·09
lorence V.	J. A. Halliday, Murray Bridge	319	1043·30	309·14
rincess Superior	J. A. Halliday, Murray Bridge	319	1199·25	572·84
inne Revel of Riverdale	J. A. Halliday, Murray Bridge	313	1124.55	423·54
igger	G. G. Hall, Mypolonga	319	940·55	412·37
ancy	G. & J. Paltridge, Mypolonga.	319	965·65	425·75
igger	L. G. Foster, Mypolonga	319	1049·75	485·48
oany	L. G. Foster, Mypolonga	319	832·35	441·20

MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR OCTOBER, 1922.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during October.	Per Cow during October.	Per Cow August to October.	Per Herd during October.	Per Cow during October.	Per Cow August to October.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/A	19	18·23	16,283·5	857·03	2,241·21	727·20	38·27	95·26
2/B	7	7	8,990	1,284·29	3,563·72	397·23	56·75	150·49
2/C	21·19	21	18,241	775·23	2,572·78	756·83	32·37	102·71
2/D	14	11	7,548·5	539·18	1,671·62	297·09	21·22	64·59
2/E	11	9·32	9,553	868·45	2,364·45	411·50	37·41	102·10
2/F	20	20	18,445	922·25	2,543·86	731·70	36·59	100·25
2/G	3	3	3,270·5	1,090·17	3,112·84	153·51	51·17	141·82
2/H	28	26·23	21,092·5	753·30	2,120·16	847·32	30·26	86·11
2/I	15	13·19	13,661	910·73	2,024·67	548·27	36·55	81·51
2/J	13	11·16	12,420	955·38	2,688·27	533·41	41·03	112·00
2/K	21·68	14·10	13,322·5	614·51	1,768·78	584·86	26·98	77·37
2/L	33	28·84	21,017·5	636·89	1,697·95	977·93	29·63	76·30
2/M	63·09	53·55	35,765·5	566·90	1,698·69	1,545·26	24·49	70·48
2/N	15	14·55	9,727	648·47	1,539·20	392·41	26·16	61·83
2/O	44·84	36·52	24,686	527·38	1,422·47	1,037·59	22·21	58·35
2/Q	33	31	27,404	830·42	2,196·89	1,131·74	34·30	88·12
2/R	16	15·29	17,623·5	1,101·47	2,559·66	755·31	47·21	108·04
Means	22·22	19·65	16,414·76	738·62	2,023·38	695·83	31·31	83·58

SEPTEMBER, 1922.

Corrigenda.

Herd 2/O " Per cow during September."—*For* " 505·41 " *read* " 387·33."
" Per cow August to September."—*For* " 1,013·17 " *read* " 895·09."

GRAIN GROWERS!
Please Note—
WHEN MARKETING YOUR
WHEAT, OATS, BARLEY, PEAS, CHAFF, &c.,
IT WILL PAY YOU TO GET IN TOUCH WITH
CHARLES WHITING,
GRAIN AND PRODUCE MERCHANT,
CENTRAL MISSION BUILDINGS, ADELAIDE.

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., NOVEMBER, 1922.

IMPORTS.

Interstate.

Apples (bushels)	4
Bananas (bushels)	11,578
Cherries (bushels)	3
Oranges (bushels)	3
Gooseberries (bushels)	4
Passion fruit (bushels)	11
Pineapples (bushels)	254
Tomatoes (bushels)	3
Peanuts (packages)	2
Cucumbers (bushels)	246
Marrows (bushels)	15
Onions (bags)	312
Potatoes (bags)	15,782
Bulbs (packages)	24
Plants (packages)	41
Seeds (packages)	70
Wine casks, empty (number)	4,589

Fumigated—79 wine casks.

Rejected—30bush. of bananas and 1 bag of potatoes.

Overseas.

Federal Quarantine Act.

Seeds, &c. (packages)	15,225

Of these 2 packages = 11lbs. of potatoes were destroyed.

EXPORTS.

Federal Commerce Act.

One hundred and twenty packages of fresh fruit, 780 packages of citrus fruit, 1 package of preserved fruit, 1,268 packages of dried fruit, 2 packages of jam, 1 package of honey, and 1 package of seeds were exported to oversea markets. These were consigned as follows:—

London.

Dried fruit (packages)	708
Jam (packages)	1

New Zealand.

Citrus fruit (packages)	780
Seeds (packages)	1
Dried fruit (packages)	25

South Africa.

Dried fruit (packages)	410

Holland.

Dried fruit (packages)	1
Jam (packages)	1

India and East.

Dried fruit (packages)	124
Honey (packages)	1
Preserved fruit (packages)	1
Apples (packages)	120

ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, December 13th, there being present Capt. S. A. White (Vice-Chairman), Mr. W. J. Colebatch (Principal of Roseworthy Agricultural College), Mr. J. Wallace Sandford (President of the Royal Agricultural and Horticultural Society), Messrs. A. M. Dawkins, H. Wicks, F. Coleman, W. G. Auld, L. Cowan, B.Sc. (Agric.), and the Secretary (Mr. H. J. Finnis). Apologies were received from the President (the Hon. G. F. Jenkins, M.P.). The Deputy Chairman (Mr. W. S. Kelly), the Director of Agriculture (Professor Arthur J. Perkins), and Messrs. Geo. Jeffery and Colonel Rowell, C.B.

Veterinary Surgeon for Eyre Peninsula.—The question of the appointment of a veterinary surgeon for Eyre Peninsula had again been brought under the notice of the Minister of Agriculture (Hon. G. F. Jenkins), who intimated that he could not recommend Cabinet to approve of the appointment of such an officer under present financial conditions. On the motion of Mr. H. Wicks, seconded by Mr. L. Cowan, the Secretary was instructed to communicate with the Branches of the Bureau concerned in the matter and bring under their notice the scheme propounded by the Veterinary Surgeons' Association to provide veterinary assistance in country districts.

Crop Destruction by Emus at Keith.—In reply to a communication received from the Keith Branch asking the Advisory Board to bring under the notice of the Government the fact that emus had been proving troublesome to crops, the Secretary was instructed by the Board to inform the Branch that after investigating the matter the Board could not see its way to take any action.

Suggested Placing Kangaroos on Vermin List.—The 1922 Conference of Franklin Harbor District Branches carried the following resolution—"That the black kangaroo be placed on the vermin list in the county of Jervois." After having made inquiries the Board decided not to take any action.

Wheat Receipts.—From time to time resolutions have been received from individual Branches of the Bureau, and also from District Conferences and the Annual Congress, suggesting that farmers should be supplied with receipts setting out the individual weights of bags of wheat delivered. In accordance with a recent decision of the Board Mr. F. Coleman and the Secretary (Mr. H. J. Finnis) waited on the Corn Trade Section of the Chamber of Commerce to discuss the matter. The Secretary duly reported that at the conference which had taken place the representatives of the Chamber of Commerce had stated that any farmer who asked a local wheat agent for a statement showing the weights of individual bags of wheat would receive same.

Orange Red Scale in Gardens at Gawler.—An intimation was received from the Horticultural Instructor to the effect that necessary steps were being taken to suppress the orange red scale in the Gawler and surrounding districts.

Salt at Glossop.—The following resolution was received from the Berri Branch—"That the Minister of Irrigation be asked to visit Glossop with the object of becoming well acquainted with the salt trouble in that locality, so as to be better able to assist in devising some means of combating what has already become a serious menace to many settlers." It was decided to forward the resolution to the Minister.

Registration of Bulls.—The North Booborowie Branch brought under the notice of the Board the fact that several bulls that were not registered were straying on the stock road. The Secretary was instructed to bring the matter under the notice of the Minister of Agriculture.

Take-all Investigations.—The Koppio Branch asked for the publication in pamphlet form of the latest results of investigations concerning "take-all." It was decided to communicate the request to the Minister, suggesting that the Vegetable Pathologist might prepare the necessary data.

New Branches.—Approval was given for the formation of new Branches at Wirrulla and Darke's Peak, with the following gentlemen as foundation members:—Wirrulla—H. Doley, J. M. Souter, R. D. Burke, J. D. Dinsdale, T. L. and C. R. Lovegrove, L. R. and C. H. Hortop, E. H., W. A., R. H., and L. W. Mudge, L. S. Pearson, G. C. Dunn, C. and R. Hitch, H. E. Sacks, B. Penna, J. A. McIntyre, H. J. Elefsen, E. J. Skinner, C. H. Thomas, A. C. Freeman. Darke's Peak—J. B. Davis, J. C. R. and C. Kobelt, W. J. Trimble, P. A. Millar, C. A., G. A., G., and H. H. Noble, M. C. Kenny, W. W. Wake, E. Lathlean, T. E. Moten, H. Hampel, A. Bruce.

Branches to be Closed.—It was decided to close the Freeling and Julia Branches.

New Members.—The following names were added to the rolls of existing Branches:—Kongorong—P. Jenner; Glossop—A. J. Mc. Glinchey, J. F. A. Davis, J. H. Fewster, E. Grosse; Wynarka—H. D. Henriksen; Laura—F. L. Bundey, H. M. Dingle; Cygnet River—H. Cook, A. Letton, L. H. Moar, H. Hooper, W. A. Boettcher, Kangarilla—F. G. Osmond, W. Collins; Loxton—J. Dowley; Miltalie—C. Deer; Wirribara—T. Phillips; Ki Ki—J. Clark, R. Wilkin; Tatiara—D. R. Milne, F. Trenorden; Maitland—H. W. Tossell, H. W. Smith, S. H. Smith; Farrell's Flat—A. E. Thompson, E. B. I'Anson, E. Pratt, R. W. I'Anson, W. Short, A. Short, H. Cope, R. Nicholls, A. Atkins, H. Atkins, W. Bucley, S. Garrett, T. Angas, M. Ruby, F. Kirk, F. Bexterson, F. Dunn, H. D. Thompson; Green Patch—Wm. Smith, T. Parkins; Smoky Bay—W. Gooley; Balhannah—J. Gemmell,

J. Usher, W. Drummond; Rapid Bay—A. Campbell; Salt Creek—P. West, R. E. Gibbs, D. J. Warnes, G. W. Warnes, G. E. Mercer; Clare—E. J. Flaherty; Gumeracha—R. Almond; Petina—Wm. Anderson, N. Anderson; Gladstone—Dr. Stewart; Wudinna—S. Garrett; Millicent—H. J. Legg, R. H. Curran, Hookina—W. Bond; Black Springs—T. Culliner, A. Oram, H. W. Turner; Lipson—W. E. Baillie; Clare—L. Champness; Balhannah—W. Thomson, E. Lauterbach; Rockwood—T. Stacey.

REASONS
WHY
WALLAROO
MT LYELL
45% SUPER
PAYS YOU BEST
1 IT REDUCES FREIGHT & CARTAGE
2 IT ALWAYS ARRIVES ON TIME
3 IT IS GUARANTEED DRY & FREE RUNNING
ORDER NOW

THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF DECEMBER.

The following reports on the general Agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective Managers:—

Booborowie.—Weather—Weather conditions for December have been very varied, consisting of thunderstorms, heat, cold, rain, and wind; 221 points of rain were registered up to the 29th inst. Crops—The crops are yielding much better than was anticipated earlier in the season, and some heavy grain yields are being obtained, with a good sample. Natural Feed—Natural feed is abundant in this locality, excepting where a fire travelled on the 23rd inst., which swept everything in front of it, including wheat crops and haystacks. Stock—Stock are all in good healthy condition. Pests—Rabbits are troublesome in places. Miscellaneous—Harvesting in many instances is not half finished, owing to the continued bad weather conditions.

Eyre Peninsula.—Weather—Very poor harvesting weather; rain on seven days, with one heavy rain of 118 points. Crops—Harvesting almost completed, but considerable amount of harvesting time lost owing to cool weather. Yields turning out fairly well; Gluyas on new land averaged 18bush. 39lbs., and Emperor on old land broken up just before seeding, 20bush. 36lbs. Natural Feed—Spear grass commencing to make a move after heavy rain. Stock—All in fair condition, but have to hand feed mares and foals. Pests—Flies numerous and rabbits putting in an appearance again. Miscellaneous—Have had a fine crop of apricots, and disposed of them all locally. All other trees in orchard doing well.

Kybybolite.—Weather has been rather exceptional for December. Dry and warm conditions continued from November into the first week of December, after which a good steady rain was received, and since then comparatively cool conditions have prevailed, the last week being wet as well as cool. Altogether 281 points of rain were received, which is considerably above the average of 123 points. For the year 2,069 points have been registered, which is 2in. below the average for the past 17 years. Crops—The weather has delayed harvesting of cereals, but has not materially damaged crops, other than to cause the loss of oats that are late in being harvested. Summer crops are making very good growth, although the cool weather has somewhat retarded the growth of maize. Natural feed is still plentiful.

Turretfield.—Weather—This month has been just the opposite to last month, which was a record for heat and dryness, being very cold and wet; 276 points of rain were registered on 10 wet days. Crops—The bulk of the crops are in the field, either as hay or grain, the month being most unfavorable for harvesting. A large proportion of the crops was cut for hay, but the yield is lower than last year. Natural Feed—This is all finished, there being very little land in this district left for grazing. Stock is in fair condition; the milking cows are going off as the conditions become drier. Pests—Insect pests are numerous, especially in the gardens. Miscellaneous—The vineyards look very healthy, and the late rains should result in good development in the berries.

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on January 1st, 1923:—

Butter.—The favorable weather during December enabled consignments of both cream and butter to travel with safety, and also assisted in keeping up the standard of quality. Supplies have shown a seasonable shrinkage, and top grades are becoming scarce. London values eased at the commencement of the month, but improved again in the latter part, and prospects look favorable for any butters that are now afloat. The only lines being shipped at present are second and third grades, which are unsaleable here at moment. At the close of the month choicest factory and creamery butter in bulk sold at 1s. 4¼d., prints ¾d. extra; second grade factory and creamery, 1s. 1d.; third grade, 1s.; best separators and dairies, 1s. 2½d. to 1s. 3½d.; fair quality, 13d. to 14d.; well selected store and collectors, 11½d. to 12½d.

Eggs.—Supplies have kept up wonderfully well, and owing to many of the pulp manufacturers and picklers having ceased operations, the market eased somewhat, values being:—Fresh hen, 10d.; duck, 11d.

Cheese.—South-Eastern factories have sent on considerable quantities, but it is pleasing to report that a good demand has ruled for all offering. London has been buying freely, and this has kept stocks from accumulating. Rates at the end of the month were 8½d. to 9d. for large to loaf.

Honey.—Fair quantities of new take continue to come forward, but where quality is right good business has been experienced, prime clear extracted selling at 3½d. to 3¾d., but second grades have found a dragging sale at 2d. to 2½d. Beeswax 1s. 7d. for clear samples.

Almonds.—Only odd consignments have come forward, which have been readily placed at quotations. Brandis, 1s.; mixed softshells, 11d.; hardshells, 5½d.; kernels, 1s. 7d.

Bacon.—The demand for this line has been exceptionally brisk, and all forwardings have found speedy outlet. The call for hams has been quite up to the usual Christmas trade; in fact, at the latter end of the month many orders could not be executed. Best factory cured sides, 12½d. to 13½d.; middles, 1s. 2½d. to 1s. 3d.; hams, 1s. 7d. to 1s. 8d.; lard, in packets 8d., in bulk 7d. to 7½d.

Live Poultry.—During the month we held daily sales, which proved very satisfactory, not only to consignors, but to the trade generally. Supplies have been exceptionally heavy, but the demand at each auction readily cleared all offering. Prices throughout have been very satisfactory, and in some instances quite record sales were secured. Crates obtainable on application. Prime roosters, 5s. 3d. to 7s. each; nice condition hens, 4s. to 5s.; plump hens, 3s. 9d. to 5s.; medium hens, 2s. 3d. to 3s. 6d.; geese, 7s. to 8s. 6d.; ducks, good condition, 5s. to 8s. 6d.; fair condition, 3s. to 4s. 9d.; turkeys, prime condition, 1s 9d. to 2s. 4d. per lb. live weight; fair condition, 1s. 4d. to 1s. 8d.; fattening sorts lower; pigeons, 8½d. each.

Potatoes.—The crop of locally grown has proved to be very light, and as there are not enough being marketed for city requirements, supplies have to be augmented from Victoria. Quotations are at close of month:—New Victorian Pinkeyes, 12s. to 13s. per cwt.; locals, from 14s. to 15s. per cwt. on trucks Mile End.

Onions.—Our supplies of this commodity are keeping up well, and values again came back during the month, the market at the close being from 13s. to 14s. per cwt. on trucks Mile End.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of December, 1922, also the average precipitation to the end of December, and the average annual rainfall.

Station.	For Dec., 1922.	To end Dec., 1922.	Av'ge. Annual Rainfall
Far North and Upper North.			
Oodnadatta	1·37	5·45	4·93
Marree	1·58	2·62	6·14
Farina	0·89	3·64	6·73
Copley	1·52	4·08	8·50
Beltana	1·25	5·16	9·05
Blinman	2·29	7·73	12·61
Tarcoola	2·22	4·55	7·91
Hookina	1·92	11·20	13·60
Hawker	1·89	12·67	12·93
Wilson	3·39	13·35	12·56
Gordon	2·67	10·27	11·60
Quorn	3·78	13·07	14·24
Port Augusta	1·41	9·04	9·68
Port Augusta West	1·29	8·41	9·74
Bruce	3·29	10·99	10·76
Hammond	2·32	12·17	11·90
Wilmington	1·71	16·34	18·44
Willowie	2·51	15·50	12·44
Melrose	2·17	24·33	23·88
Booleroo Centre	1·60	14·83	15·67
Port Germein	0·88	11·34	12·93
Wirrabara	1·53	16·49	19·85
Appila	1·88	14·30	15·01
Cradock	2·55	12·22	11·50
Carrieton	2·89	12·64	12·91
Johnburg	2·80	13·17	10·85
Eurelia	2·81	12·80	13·56
Orroroo	2·45	12·66	13·75
Nackara	2·93	14·51	11·85
Black Rock	3·17	13·71	12·73
Ucolta	2·16	10·35	12·10
Peterborough	3·08	13·81	13·53
Yongala	3·76	17·50	14·51
Lower North-East.			
Yunta	1·89	7·22	8·93
Waukaringa	1·36	5·46	8·61
Mannahill	1·56	4·66	8·79
Cockburn	0·56	5·00	8·42
Broken Hill, N.S.W.	1·13	6·76	10·08
Lower North.			
Port Pirie	1·56	13·80	13·55
Port Broughton	2·00	14·94	14·27
Bute	2·54	15·05	15·80
Laura	1·82	18·96	18·25
Caltowie	1·73	17·67	17·19
Jamestown	2·03	19·53	17·86
Bundaleer W.Wks.	2·35	19·00	18·05
Gladstone	2·02	19·12	16·22
Crystal Brook	1·90	17·36	15·93
Georgetown	1·78	21·04	18·50
Narridy	1·47	13·74	16·43
Redhill	2·04	17·06	16·93
Lower North—*continued*.			
Spalding	2·51	19·72	20·41
Gulnare	2·47	19·56	19·34
Yacka	2·30	16·72	15·45
Koolunga	2·31	16·51	15·87
Snowtown	2·25	16·39	16·05
Brinkworth	2·80	17·17	16·26
Blyth	2·99	19·78	16·96
Clare	3·82	29·30	24·60
Mintaro	2·86	28·74	23·40
Watervale	3·66	31·64	27·44
Auburn	3·30	29·67	24·30
Hoyleton	2·84	20·76	17·85
Balaklava	2·10	17·43	15·91
Port Wakefield	2·06	12·84	13·29
Terowie	2·79	15·19	13·78
Yarcowie	2·06	16·03	14·18
Hallett	2·79	17·61	16·47
Mount Bryan	1·79	18·40	16·74
Kooringa	1·21	19·25	18·06
Farrell's Flat	2·71	20·24	18·97
West of Murray Range.			
Manoora	2·30	22·96	18·78
Saddleworth	2·50	31·61	19·74
Marrabel	2·44	24·07	19·67
Riverton	2·41	24·24	20·71
Tarlee	1·81	22·47	17·81
Stockport	2·75	21·17	16·49
Hamley Bridge	2·42	19·02	16·52
Kapunda	2·36	22·21	19·85
Freeling	2·83	21·41	17·90
Greenock	3·00	24·59	21·60
Truro	2·36	20·93	20·80
Stockwell	2·29	21·05	20·31
Nuriootpa	3·14	22·04	20·99
Angaston	3·12	24·48	22·48
Tanunda	3·03	24·09	22·20
Lyndoch	3·97	24·84	22·88
Williamstown	4·34	27·86	27·47
Adelaide Plains.			
Mallala	2·96	19·10	16·66
Roseworthy	3·24	19·53	17·29
Gawler	4·19	20·35	19·09
Two Wells	4·15	17·68	15·83
Virginia	3·74	17·65	17·31
Smithfield	3·65	19·21	17·16
Salisbury	3·96	21·26	18·45
North Adelaide	3·56	27·48	22·22
Adelaide	2·97	23·20	21·05
Glenelg	2·21	20·80	18·37
Brighton	2·16	21·99	21·34
Mitcham	3·22	32·00	24·06
Glen Osmond	3·75	31·02	25·78
Magill	4·10	29·45	25·24

RAINFALL—*continued.*

Station.	For Dec., 1922.	To end Dec., 1922.	Av'ge. Annual Rainfall
MOUNT LOFTY RANGES.			
Teatree Gully	4·64	30·61	27·65
Stirling West	5·16	55·32	46·59
Uraidla	4·35	53·89	43·92
Clarendon	3·78	38·81	32·98
Morphett Vale	2·46	26·87	22·79
Noarlunga	2·18	23·16	20·35
Willunga	3·03	31·85	25·89
Aldinga	2·58	23·52	20·35
Myponga	2·85	34·90	29·16
Normanville	2·01	25·91	20·61
Yankalilla	1·81	29·37	23·10
Mount Pleasant	5·30	32·89	27·16
Birdwood	5·92	31·38	29·33
Gumeracha	5·87	36·84	33·29
Millbrook Reservoir	5·80	39·29	—
Tweedvale	5·52	39·12	35·55
Woodside	4·45	35·59	32·11
Ambleside	4·30	40·19	34·67
Nairne	3·32	29·17	28·42
Mount Barker	5·20	38·13	31·18
Echunga	4·08	37·28	32·96
Macclesfield	3·81	34·13	30·57
Meadows	4·42	41·21	36·04
Strathalbyn	3·19	22·07	19·32
MURRAY FLATS AND VALLEY.			
Meningie	1·47	23·64	18·66
Milang	2·12	27·39	15·40
Langhorne's Creek	2·36	19·68	14·61
Wellington	1·68	15·84	14·77
Tailem Bend	2·08	16·51	14·55
Murray Bridge	1·67	14·53	13·93
Callington	2·49	17·94	15·42
Mannum	1·95	12·74	11·64
Palmer	2·45	15·13	15·47
Sedan	1·55	11·74	12·29
Swan Reach	1·11	10·30	11·09
Blanchetown	0·96	6·15	10·16
Eudunda	1·69	16·28	17·54
Sutherlands	1·51	11·46	11·19
Morgan	1·20	9·24	9·30
Waikerie	1·03	9·16	9·91
Overland Corner	0·89	9·02	11·07
Loxton	0·94	10·94	12·63
Renmark	0·54	10·04	11·09
WEST OF SPENCER'S GULF.			
Eucla	1·63	9·97	10·02
White Well	1·61	11·58	9·08
Fowler's Bay	1·04	11·02	12·16
Penong	2·04	13·48	12·49
Ceduna	1·47	8·66	10·36
Smoky Bay	1·32	10·48	—
Petina	1·13	11·48	13·04
Streaky Bay	2·36	13·82	15·10
Talia	2·00	12·52	15·46
Port Elliston	1·88	17·26	16·55
Cummins	1·72	16·19	18·90
WEST OF SPENCER'S GULF—*continued.*			
Port Lincoln	1·49	16·17	19·72
Tumby	1·43	11·46	14·76
Carrow	2·62	10·58	14·80
Arno Bay	1·87	8·64	13·30
Cowell	1·28	7·43	11·75
Point Lowly	1·14	8·79	12·40
YORKE PENINSULA.			
Wallaroo	2·65	12·76	14·18
Kadina	3·12	14·71	16·05
Moonta	3·08	14·06	15·38
Green's Plains	2·50	14·76	15·89
Maitland	3·09	20·81	20·15
Ardrossan	3·00	17·22	14·11
Port Victoria	2·73	16·81	15·47
Curramulka	2·79	17·70	18·22
Minlaton	2·18	17·49	17·91
Brentwood	1·56	15·84	15·83
Stansbury	1·69	16·02	17·04
Warooka	1·24	17·52	17·81
Yorketown	1·63	16·38	17·26
Edithburgh	2·07	16·57	16·58
SOUTH AND SOUTH-EAST.			
Cape Borda	1·12	24·13	25·10
Kingscote	1·34	16·43	19·10
Penneshaw	1·30	20·22	19·39
Victor Harbor	1·90	23·00	21·45
Port Elliot	2·16	23·70	20·26
Goolwa	1·72	18·59	17·87
Meribah	0·96	11·41	—
Mindarie	1·01	10·26	—
Karoonda	2·22	15·27	—
Pinnaroo	1·41	13·01	15·66
Parilla	1·31	13·21	14·65
Lameroo	1·89	15·12	16·37
Parrakie	2·05	15·20	14·54
Geranium	2·91	22·17	16·19
Peake	2·34	16·76	16·58
Cooke's Plains	2·00	18·54	15·04
Coomandook	1·56	17·64	17·48
Coonalpyn	1·37	16·68	17·42
Tintinara	2·06	21·24	18·60
Keith	1·81	18·82	18·17
Bordertown	2·10	17·17	19·44
Wolseley	2·44	18·15	18·12
Frances	2·57	18·50	19·78
Naracoorte	2·46	24·87	22·52
Penola	2·00	24·00	26·29
Lucindale	1·69	24·83	22·95
Kingston	1·65	26·75	24·47
Robe	1·46	30·65	24·59
Beachport	1·26	25·65	27·24
Millicent	1·87	30·61	29·36
Kalangadoo	2·69	31·05	—
Mount Gambier	2·17	28·23	31·34

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings		Branch.	Report on Page	Dates of Meetings	
		Jan.	Feb.			Jan.	Feb.
Alawoona	*	—	—	Georgetown	*	27	—
Aldinga	*	—	—	Geranium	586	27	24
Amyton	*	—	5	Gladstone	570	—	—
Angaston	*	—	—	Glencoe	590	—	—
Appila-Yarrowie	*	—	—	Glossop	*	31	28
Arthurton	*	—	—	Goode	*	31	28
Ashbourne	590	—	—	Green Patch	585	29	26
Balaklava	*	13	10	Gumeracha	*	—	5
Balhannah	‡	—	2	Halidon	*	—	—
Barmera	*	30	27	Hartley	*	—	28
Beetaloo Valley	*	—	—	Hawker	*	30	—
Belalie North	*	—	—	Hilltown	*	—	—
Berri	*	31	28	Hookina	565	—	1
Big Swamp	*	—	—	Inman Valley	*	—	—
Blackheath	*	—	—	Ironbank	*	27	—
Black Springs	571	—	—	Kadina	*	—	—
Blackwood	*	15	19	Kalangadoo	596	13	10
Block E	586	—	—	Kangarilla	589	—	—
Blyth	566	6	3	Kanmantoo	*	27	—
Booleroo Centre	570	R	2	Keith	*	—	—
Borrika	*	—	—	Ki Ki	*	—	—
Bowhill	*	—	—	Kilkerran	576	R	27
Brentwood	*	—	1	Kimba	*	—	—
Brinkley	*	—	—	Kingscote	*	—	—
Bundaleer Springs	*	—	—	Kingston-on-Murray.	*	—	—
Burra	*	—	—	Kongorong	*	—	1
Bute	*	30	27	Koonibba	*	—	2
Butler	584	—	—	Koppio	580	29	26
Cadell	*	—	—	Kybybolite	*	R	R
Canowie Belt	*	—	—	Lake Wangary	580	—	—
Carrow	584	—	1	Lameroo	*	5	2
Cherry Gardens	*	30	—	Laura	568	5	2
Clanfield	*	—	—	Leighton	*	—	—
Clare	572	—	2	Lenswood and Forest Range	*	—	—
Clarendon	588	29	26				
Claypan Bore	*	3	28	Lipson	585	—	—
Cleve	*	31	28	Lone Gum and Monash	*	3	28
Collie	579	R	R	Lone Pine	576	—	—
Colton	*	26	23	Longwood	590	—	—
Coomandook	*	31	28	Loxton	*	—	—
Coonalpyn	*	5	2	Lucindale	596	—	—
Coorabie	*	—	—	Lyndoch	*	—	—
Cradock	566	—	—	McLachlan	*	—	—
Crystal Brook	*	27	—	Maitland	578	R	1
Currency Creek	588	—	—	Mallala	*	15	19
Cygnet River	*	—	—	Maltee	585	—	2
Dawson	*	—	—	Mangalo	*	—	—
Denial Bay	*	—	—	Marama	586	R	R
Edillilie	*	27	24	Meadows	590	3, 31	28
Elbow Hill	F	9	6	Meningie	*	—	—
Eurelia	*	27	—	Milang	*	13	10
Farrell's Flat	570	—	—	Millicent	*	6	3
Frances	*	—	24	Miltalie	*	27	—
Gawler River	*	30	—				

INDEX TO AGRICULTURAL BUREAU REPORTS—*continued.*

Branch.	Report on Page	Dates of Meetings.		Branch.	Report on Page	Dates of Meetings.	
		Jan.	Feb.			Jan.	Feb.
Mindarie	*	—	5	Riverton (Women's)	*	—	—
Minlaton	*	—	2	Roberts and Verran	582	R	26
Minnipa	*	31	28	Rockwood	590	—	5
Monarto South	585	—	—	Rosedale	576	R	—
Moonta	*	R	R	Rosy Pine	*	—	—
Moorak	594	—	1	Saddleworth	*	—	—
Moorlands	*	—	—	Saddleworth (Women's)	*	—	—
Moorook	*	—	—	Salisbury	*	—	6
Morchard	565	R	—	Salt Creek	585	R	—
Morgan	*	—	—	Sandalwood	*	—	—
Morphett Vale	*	4	1	Shoal Bay	590	—	—
Mount Barker	*	31	28	Smoky Bay	584	27	—
Mount Bryan	*	—	—	Spalding	*	—	—
Mount Byran East	*	—	—	Stockport	*	—	—
Mount Compass	*	—	—	Streaky Bay	*	—	—
Mount Gambier	*	13	10	Strathalbyn	*	30	27
Mount Hope	582	27	—	Talia	*	R	R
Mount Pleasant	590	—	—	Tantanoola	*	27	—
Mount Remarkable	*	—	—	Taplan	*	6	3
Mundalla	*	31	—	Tarcowie	566	30	27
Murray Bridge	*	—	—	Tarlee	F	R	—
Mypolonga	*	31	28	Tatiara	596	20	17
Myponga	*	—	—	Two Wells	*	—	—
Nantawarra	*	—	1	Uraidla & Summertown	*	—	5
Naracoorte	596	13	10	Veitch	*	—	—
Narridy	*	6	3	Virginia	*	—	—
Narrung	*	6	3	Waikerie	588	—	—
Neeta	*	—	—	Wall	*	—	—
Nelshaby	*	27	—	Wanbi	*	—	—
Netherton	*	—	—	Warcowie	*	—	—
North Booborowie	570	R	—	Watervale	576	—	—
North Bundaleer	*	—	—	Weavers	578	29	26
Northfield	*	—	—	Whyte-Yarcowie	*	—	—
Nunkeri and Yurgo	*	7	4	Wilkawatt	*	R	R
O'Loughlin	*	31	28	Williamstown (Women's)	‡	R	7
Orroroo	*	—	—	Williamstown	576	—	—
Owen	*	—	2	Willowie	*	31	28
Parilla	*	—	—	Wilmington	566	R	28
Parilla Well	*	—	5	Windsor	575	R	—
Parrakie	*	—	—	Winkie	588	—	—
Paruna	586	—	—	Wirrabara	570	13	10
Paskeville	578	—	2	Wirrega	*	—	—
Pata	*	—	—	Wirrilla	*	27	—
Penola	594	—	3	Wolowa	*	—	—
Petina	C	R	24	Wudinna	C	—	—
Pinnaroo	*	5	2	Wynarka	*	—	—
Pompoota	‡	10	14	Yabmana	*	—	—
Port Broughton	*	—	2	Yacka	*	30	27
Port Elliot	F	R	17	Yadnarie	584, 585	30	27
Port Germein	*	—	3	Yallunda	*	—	—
Pygery	582	—	—	Yaninee	*	—	—
Ramco	588	29	26	Yeelanna	*	27	—
Rapid Bay	589	6	3	Yongala Vale	*	—	—
Redhill	*	—	—	Yorketown	*	—	—
Rendelsham	596	31	28	Younghusband	*	4	1
Renmark	*	—	1				
Riverton	*	—	—				

* No report received during the month of December. ‡ Held over until next month.
R In recess. F Formal. C Congress report.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

HOOKINA (Average annual rainfall, 12in.).

November 2nd.—Present: 10 members and two visitors.

WELLS AND BORES.—Mr. H. V. Heneschke, who read a paper on this subject, said in districts that were subject to drought, the provision of a well was most essential. In places where water could be obtained at a shallow depth—60ft. or less—he favored the sinking of a shaft, but where one had to go to a greater depth the bore was to be preferred. The cylinder pump gave better results in a well than a force pump. He admitted that the former took some time to repair if it got out of order, but it very seldom refused to work, and if the water had to be forced to any considerable height after leaving the well, a packing box on the top of the well could be erected. Mr. Heneschke was of the opinion that a reinforced tank was best, except, of course, in places where the land was likely to cause the tank to crack. In such an event galvanized iron should be used. In the discussion that followed, Mr. B. Murphy favored the shaft for a depth not exceeding 100ft. Mr. F. Cagney thought it was more expensive to sink a shaft than a bore. Another point in favor of the bore was that there was very little danger of accidents when sinking. Mr. H. Spiers considered that the bore was the better. Mr. S. Stone agreed with the previous speaker, and stated that the bore pump seldom required any repairs, because it was left in the water, and the leathers did not dry and crack. A report of the proceedings of the Annual Congress was then delivered by Mr. A. I. Heneschke.

HOOKINA (Average annual rainfall, 12in.).

November 30th.—Present: 11 members and five visitors.

CARE OF HARNESS.—In the course of a paper dealing with this subject, Mr. M. Henschke said every farmer should give all the leatherwork on the harness the best of care.' A rail should be erected on which to hang all the collars, and a peg for the winkers and spiders. Collars, winkers, and spiders should be given a dressing twice a year with mutton fat and kerosine melted in a tin, and when warm applied to the leather. For the seats and flaps of saddles he recommended a prepared harness dressing, and neatsfoot oil mixed with the white of an egg for the girths. Members generally agreed with the views of the writer of the paper so far as greasing the harness was concerned, but they considered greasing in the summer time would do more harm than good, because it would help to burn the leather. It would be better to give it only one greasing a year, and that just before the commencement of winter. The harness should be well soaked with water to remove the sweat before the grease was applied. Mr. J. O'Connor said it was a good plan to polish saddles with boot polish.

MORCHARD (Average annual rainfall, 13.50in.).

November 4th.—Present: nine members and two visitors.

CONSERVATION OF STRAW.—Mr. H. Kupke, who read a short paper dealing with this subject, said that too many farmers took the view that straw was a waste product on the farm. Good, clean straw could be put to many useful services on the farm. First of all a round stack, say, of 15 or 20 tons, should be erected between the watering place and the stables, for the horses were very fond of rubbing themselves against the straw. The cattle should also be provided with a stack when they would soon make a practice of camping regularly near the stack. If a little salt was added to the straw the stock would eat quite a considerable portion of the fodder. Then again, a straw stack placed in the paddock provided excellent shelter for the stock during the cold and wet nights of winter. Straw could also be used for bedding for the pigsties, loose horse boxes, it could be placed in the fowl yard, and used as dunnage for the haystack. Mr. Kupke was of the opinion that if more care was taken of the straw there would not be so much to fear on account of the stock during periods of drought.

A discussion took place on the question "Which are the more Economical to Use, Steel or Cast Shares for Plough or Cultivator." Mr. B. McCallum found the steel shares lighter in draught. Mr. Kupke advocated steel shares for both plough and cultivator, and said he had ploughed over 100 acres with one set of steel shares. The Branch decided to go into recess until February, 1923.

TARCOWIE (Average annual rainfall, 15½in.).

October 20th.

Bureau Show.—The second annual show held under the auspices of the local Branch of the Bureau on October 20th proved a very successful gathering. The people of the district took a keen interest in the fixture, and the judges, who were secured from outside districts, stated that some of the exhibits were quite equal to anything seen at country shows further south.

Seasonable Topics.—The usual monthly meeting of the Branch was held on October 31st. Mr. W. S. Ninnes, who read a paper under the title "Seasonable Topics," said all the fallow should have been completed by the end of September, and the month of October devoted to the work of cultivation. After the latter work was finished, a set of harrows should be kept in readiness to be used after every shower of rain. Fences should be attended to, "dummies" put in where posts were broken, and all loose or broken wires strained and repaired. The fences around the wheat crops should receive special attention, to keep the stock within bounds, and steps should be taken to deal with the rabbits. Noxious weeds should be destroyed, because during the month of October they were just coming into flower, at which stage it was best to adopt measures to keep them in check. In preparation for the hay and wheat harvest, the binder and harvester should be cleaned and thoroughly overhauled, and the harness examined in anticipation of the heavy work that the horses would be called upon to perform. The farmer should also see that water facilities were in perfect order before the hot weather commenced, because any hitch in the watering arrangements would mean a big loss of time during harvest. For the benefit of the women folk on the farm, the farmer should make arrangements for a good supply of firewood for use in the kitchen. All sheep should be dipped, not only as a safeguard against lice and tick, but to help the sheep in resisting the attacks of the blowflies. The hay yard should be properly cleaned out, and firebreaks ploughed around the stacking ground and around crops and grass paddocks. The speaker advised every farmer to keep a supply of carbonate soda on hand during the harvesting, because he had found it a splendid remedy for horses that received an overdose of wheat. An interesting discussion followed, in which Messrs. C. A. Kotz, J. P. Smith, H. Edwards, W. L. Hortin, and D. Smith tok part.

CRADOCK, November 18th.—The meeting was devoted to a discussion on the subject "Wool Pools."

WILMINGTON, November 8th.—Mr. E. L. Carlyon read a paper, "Young People on the Farm." It was decided that the Branch should go into recess until the February, 1923, meeting.

MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BLYTH (Average annual rainfall, 16.46in.).

October 7th.—Present: 14 members.

Building a Hay Stack.—The following paper was contributed by Mr. G. F. Hutton:—"After a good site that is level and dry has been selected, the land should be measured off according to the size of the stack to be built. A good

SAVE
TIME
WORRY
AND MONEY.

YOUR

INCOME TAX

difficulties are all done away with by placing your matters in our hands. We compile both State and Federal Returns, and supply you with a service for the small sum of from 10s. 6d. per annum. You owe yourself a duty by having your returns prepared correctly, and as taxation grows more complicated each year, it is imperative that you place your affairs in competent hands immediately.

All matters coming into our office are STRICTLY CONFIDENTIAL!
We CHECK ALL ASSESSMENTS.

WRITE OR CONSULT US IMMEDIATELY, ADVICE IS FREE.

THE INCOME TAX COMPILER
COMPANY, LIMITED,
UNIVERSAL BUILDINGS, GRENFELL ST., ADELAIDE,

Public Accountants and Auditors, Taxation Attorneys, Financial and Real Estate Agents.

DIRECTORS:
G. E. THOMPSON, Manager.
I. GOLOSKY, A.C.U.A., A.A.I.S. (Late of State Taxation Dept).
A. SAIDE, A.F.I.A., Secretary (Late of Federal Taxation Dept).

layer of straw or other suitable material should be placed on the ground for dunnage. I prefer the oblong stack to the round one, because it is easier to keep "true" when building and easier to top. For the first layer I would place the outside row of sheaves with butts out and back up with heads out, overlapping sufficiently to make the middle a fair bit higher than the outside. After this, I would build with butts out, keeping the corners and the middle well up. The sides of the stack should be built perpendicularly. When the stack settles the weight will push the sides out slightly as they go up. The eaves are formed by placing a row of sheaves out about 4in. from the stack, and then the following layers should be very gradually brought in to put a good top on the stack. A good layer of straw should be placed on the top of the stack as soon as possible after the stack is completed. When building in a hay shed I favor the adoption of the following practice:—The end bay should be built as the end of an ordinary stack with butts out on three sides, leaving the inside end as if you were extending the stack in the ordinary way. The second bay, and so on, is built in the same way with butts against the inside of the first bay. When you get to the other end of the shed, of course, you will need to place the butts out in order to form a solid side. This method makes it very easy to move the hay when it is required."

Preparing the Farmer's Clip for Market.—In the course of a paper dealing with this subject, Mr. A. L. McEwin said the question was one which depended on the number of bales that the farmer expected to obtain from his clip. If not more than five or six bales he advised no more than one skirting of pieces, care being taken to remove the wool on the legs and the nose. Where the fleece was very burry it would be necessary to skirt slightly more heavily. He did not think there was any advantage with a small clip in making more than two classes. In that district it took about 200 sheep to make a bale of bellies. That number should turn out another bale of pieces, with four bales of good wool. The stained pieces should be placed in bran bags. In larger flocks he recommended having four classes, viz., bellies, pieces, A. pieces, and fleece, especially if there was very much burr in the wool. All yellow fleeces should be kept by themselves. Like all goods, wool should be prepared in such a manner that it would please the eye of the buyer. Even in branding the bales it paid to have proper lettering and neatly branded bales. The branding should be as follows:—1st, No. of bale; 2nd, distinctive initials; and 3rd, the name of the farm. It was the practice of the wool firms to class the small lots of wool and sell four or five brands in one lot. That, he thought, was an advantage to all parties, so that farmers should be careful in baling their wool to class it carefully and honestly for their own advantage. The picking up and handling of the fleece required a table about 8ft. by 4ft. on which to throw the wool. The fleece should be rolled up neatly by throwing the edges into the middle and rolling the fleece from the head to the tail. The fleeces should be packed neatly in the bale, one in each corner and one in the middle, making five in a layer. That would make the bale solid and compact if baled in a box press.

LAURA.

November 6th.—Present: nine members.

Poultry Keeping.—A paper was read by Mr. F. Millington. The following is extracted therefrom:—A few years ago poultry keeping was considered only suitable for women and disabled persons, but since the advent of laying competitions it has been proved beyond all doubt that a good living can be made by keeping poultry, but such must be on intelligent lines, and made a real live business proposition. A little dirty corner at the bottom end of the yard, a few sticks, a piece of wire netting, and a few pieces of iron or opened kerosine tins to form the roof, and several inches of filth and decayed vegetable matter for the fowls to run on is only courting disaster, and the person who carries on in that way will surely prove a failure. I will now deal with the position which is essential for poultry. The soil should be dry and well drained—a sandy or gravelly soil is the best—but fowls will thrive on almost any soil that does not hold the wet. This applies to birds that are kept in runs or the open, but if they are kept in sheds, with plenty of scratching material, it does not matter what sort of ground they are on. It is rather a costly matter to start poultry farming for a living right away, as the outlay shows no return for many months if you start by hatching chicks from purchased eggs. From my own experience I favor buying day-old chicks as the most economical way. A good brooder can be made for a few shillings if you are a handy man with tools. Very little time and attention is required beyond feeding the chicks and keeping the brooder clean. While the chicks are growing you can build the chicken houses and little runs. As they grow up you will require more room for them; you will also need a pullet house and run. While they are in the chicken stage you will have time to build a permanent house and yard for the first lot of pullets. All that work can be done in spare time, and you will have the pleasure of seeing the stock coming to maturity. I have not taken into consideration any hatching by hens—that can be done if one so desires—but hens are not so satisfactory as incubators, and broodies are not procurable until the best part of the hatching season is over. In dealing with the housing of the fowls, some keepers of large flocks of layers claim that the shed system is far preferable to the open runs. The shed system means that the fowls are confined in houses especially designed for that purpose, and have no open runs. The floors of the houses are covered to a depth of 10in. or 12in. with suitable scratching material, such as short stable manure, dry leaves, and short, dry grass; in fact, anything will do so long as it is clean. The grain is then thrown in and buried in this litter, and the fowls have to scratch for it. This affords them a very beneficial exercise. The fowls are also protected from all sorts of weather, and in consequence they lay much better than those in open runs. That has been a very noticeable fact during cold and wet weather, the time when eggs are most valuable. Some poultry men allow about a square yard of floor space for each fowl. Some claim that less will do, but the more room you can give them the better. The fowlhouses should be built on the continuous principle. Then there is no waste space, and no time is lost in travelling from pen to pen when feeding. All houses should face the east if possible. In this position they get all the morning sun the year round, and in summer months the birds will gladly dispense with it during the afternoon. If possible, build the houses so that feed and water can be given

Farmers and Others

IF you contemplate making your will or altering your present will, call on us or write to us, when we shall be pleased to furnish you with such information as you may desire as regards our methods of Administration of Trust Estates, and give you the benefit of our advice and experience without charge.

Bagot's Executor and Trustee Coy., Ltd.

The Trustee that never dies or leaves the country, that gives its whole time to its business, that acts impartially, and offers its clients such ample security that no private trustee can compare with it.

Offices: 22, King William Street, Adelaide.

from the outside. If this is done there is a great saving of time, which is very considerable if you have a large flock to attend. Be careful also that the water receptacles are all well shaded from the sun. Drinking water exposed and heated by the sun will cause untold trouble in the poultry yard. Some people claim that fowls running at large, or on free run, do better than those in the enclosure. The question is: Has there ever been any laying record made by hens running in that way? All records have been made by hens enclosed and properly fed for eggs, and if carefully handled they can be kept clean, do not get uselessly fat, and are healthy, and their keepers know exactly how things are going on in the yard.

WIRRABARA (Average annual rainfall, 18.91in.).

November 4th.—Present: 16 members, two visitors.

The Divining Rod.—Mr. P. J. Curnow read a paper on this subject. Although there were many sceptics, he said, there were also many people who believed in the merits of the divining rod as a means of finding water. There were many instances where success had attended their efforts, and he was of the opinion that some men were specially gifted as diviners. He thought a landholder would be well advised, before expending cash in endeavoring to find water in a doubtful place, to accept the services of a proved diviner. The theory that water could often be found in low-lying ground was not correct, because supplies frequently came from long distances and were prevented from reaching low-lying flats or gullies on account of the rock formation. It frequently happened that larger supplies were found on hillsides or hilltops than in adjoining low-lying country, and unless the prospective well sinker had some special knowledge in relation to geological formation he was liable to waste time and money in a fruitless search. If, on the other hand, he sought the advice of a successful water diviner he would be informed whether the site was of a water-bearing character and whether a good supply would be available. A good discussion followed the reading of the paper.

BOOLEROO CENTRE, November 2nd.—Mr. R. W. Rechstein, who recently returned from a trip abroad, delivered an address, "Horses *versus* Tractors." Speaking of America, Mr. Rechstein said that judging by what he had seen in that country, the horse was the best means of traction for the average farmer to employ at the present time. In the discussion that ensued Messrs. W. Mills, M. Carey, H. Michael, and C. Paterson agreed that it would be a very difficult matter entirely to do without horses on the farm, although on large holdings, where two or more teams were employed, the tractor might come in useful.

GLADSTONE, November 11th.—Members of the Gladstone Agricultural Bureau spent a very interesting and profitable afternoon on November 11th. Foregathering at the homestead of Mr. J. Sargeant, a visit of inspection was paid to the hay and wheat crops. A visit was then paid to Dr. Stewart's residence for the purpose of inspecting specimens of wheat grown in an experimental plot. Members then returned to Mr. Sargent's homestead, when the usual business of the Branch was transacted. Discussions arose on the subjects, "Co-operation" and "Commission Charges on Manures and Machinery." Mr. J. J. Gale gave an interesting report of the Farmers' Day at Booborowie Experimental Farm. Afternoon tea was provided by Mrs. Sargent and her daughters.

FARRELL'S FLAT, December 1st.—The inaugural meeting of the Branch was held on Friday, December 1st, when 14 members attended. The officers were elected, and a programme for the period ending Decembr, 1923, was compiled.

NORTH BOOBOROWIE, October 31st.—The final meeting of the year took the form of a homestead gathering at the Government Experimental Farm, Booborowie, when 16 members of the local Branch of the Bureau and about 100 members, including delegates from the Booleroo Centre, Black Springs, Bundaleer Springs, Canowie Belt, Leighton, Jamestown, Whyte-Yarcowie, Mount Bryan, Bute, and Hartley Branches, under the guidance of the Director of Agriculture (Professor Arthur J. Perkins) and the Manager of the Farm (Mr. E. A. Bristow) inspected the farm buildings, crops, and livestock. Afternoon tea was provided by the ladies.

LOWER-NORTH DISTRICT.

(ADELAIDE TO FARRELL'S FLAT.)

BLACK SPRINGS.

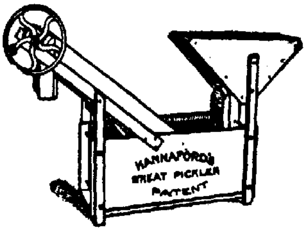
November 8th.—Present: 23 members.

Blacksmith's Shop on the Farm.—Mr. A. Siegert read a paper, in the course of which he said no farm should be without a blacksmith's shop and a good set of tools, comprising a large set of wrenches, three hammers—a 2½lb., 6lb., and a sledge—2cwt. anvil, and an assortment of chisels and punches, portable forge, large drilling machine, vice, and a strong set of taps and dies. The shop should be built on a convenient site to the north-east of the stables and sheds. The shop should be built of stone, with an iron roof, to minimise the danger of fire. It would be advisable to have a portable forge for awkward work, such as making gates, &c. Numerous jobs, such as making swings, eyebolts, split links, and sharpening plough or cultivator shares, could be done in the blacksmith's shop on the farm. All implements before being used should be brought to the shop and overhauled. When screwing up nuts, the thread of the bolts could be lightly marked with a chisel to prevent the nuts from coming off. The shop was especially handy when a small breakage which perhaps would take the best part of a day to take to the township for it to be repaired, could be repaired on the farm in half an hour. The price of shoes and nails was about 3s. 6d. a horse, whereas the blacksmiths charge from 7s. 6d. to 10s., so that a considerable saving every year would be effected when the farmer had from 15 to 20 horses to shoe.

DURABESTOS
WILL MAKE A
DURABLE HOME

DURABESTOS is the most permanent and perfect home building sheet. It is made of Asbestos-Cement, a material like marble for durability. As easy and economical to erect as wood lining.

SAMPLE AND BOOKLET POST FREE FROM
WUNDERLICH,
LIMITED,
THE CEILING PEOPLE,
113, CURRIE ST., ADELAIDE



THE
HANNAFORD WHEAT PICKLER

Is a complete compact machine to thoroughly and successfully pickle and clean wheat at a reasonable rate per hour.

The method is the best.
The process is continuous.
The operator is clean and not hard worked
It turns the irksome job into one of pleasure.

Users appreciate this clean method of pickling, and consider the machine has advanced pickling methods, and put them right up to date.

This machine is a boon to the farmers who appreciate good work and a clean method.

FULLER PARTICULARS FROM
ALF. HANNAFORD & Co.
Prospect, South Australia.

CLARE (Average annual rainfall, 24.30in.).

November 3rd.—Present: 14 members and two visitors.

Summer Fodders.—The following paper was read by the Honorary Secretary (Mr. W. H. Lewcock):—"The necessity for green succulent food during the summer months to help balance the dry natural pastures, and to give cows and horses and other stock a change of diet, is well known. Green feed during the summer months acts as a slight laxative, keeps the bowels in order, and helps to prevent impaction, dry bible (which is a form of impaction), and other digestive troubles in cows. The blood is cooled and the animals are kept in good health. Of the summer fodders lucerne stands first. The cultivation is simple, but requires care, and with good treatment lucerne yields profitable returns. It does best on rich alluvial flats, and with irrigation and proper treatment, a stand will last for years. Lucerne is best preceded by bare fallow, the winter furrow being deep. It pays to put time into the preparation of land for lucerne, because the cost, though apparently heavy at first, if spread over eight to 10 years, is not very great considering the better stand that is gained. The after cultivation is cheap. The seed is better sown in the early spring in this district, because, if autumn sown, it may not make sufficient growth to enable it to stand the cold, wet winter. There is a danger with spring sowing of weeds growing after the seed is sown and choking the young lucerne plants, consequently causing a serious thinning of the crop. The soil must be worked down fine, and about 2cwts. super or bonedust should be put on, and harrowed in. Seed may be broadcasted, from 4lbs. to 6lbs. to the acre being ample. If sown with a small seed drill a pound or so less can be used. To secure a better distribution of the seed, sow one-half of the quantity one way and the other half across it. It may be covered by using a pair of light harrows upside down, or a light roller may be used. Keep the crop growing by frequent irrigations, and cut just before the flowering stage. Irrigate immediately after cutting. Allow the lucerne to wilt a little before feeding it to stock, otherwise hoven may result. Without irrigation lucerne will not yield much more than two or three cuts per season. Lucerne responds well to dressings of farm yard manure. Apply it in the autumn after the last cut has been taken off. The last cut should be allowed to flower before it is cut, as the lucerne will then come away more quickly in the spring. The manure should be broadcasted, and then in the early spring worked in with light cultivating or harrowing. Lime applied at the rate of from 5cwts. to 6cwts. every three or four years helps to sweeten the soil, and indirectly liberates potash. Legumes require potash for their growth, and as there is sufficient in most of our heavy soils, the lime indirectly liberates it for plant use. On the lighter soils applications of potassic manures will be found advantageous. It is a great mistake to graze lucerne too heavily, or for any length of time, because there is a danger of the heart of the plants being eaten out and the surface of the soil being packed. Maize is essentially a summer crop, and is one of the best crops that can be grown for silage. It is a splendid fodder crop when grown with irrigation. The soil should be winter fallowed, and a heavy dressing of farmyard manure should be worked in, and the soil allowed to remain in the rough until spring. The soil should be moist, but not wet. The fallow should be worked down to a fine tilth after the danger of frosts is over, and where irrigation is practised the maize can be sown right up till December or later. Drilling is the most common method of sowing maize. It should be sown through every fourth hoe, the rows being about 28in. apart. It may be sown by hand in a shallow furrow, the plough being used to spin out the furrow and cover the seed. Care should be taken not to sow it too deeply, about 1in. to 2in. will be sufficient. It may be broadcasted where irrigation is unnecessary. Avoid sowing maize seed dry. It is better to irrigate before sowing, and have the soil moist, and so prevent a crust from forming on the surface. If a crust has formed it may be broken by using a light set of spring harrows, even though some of the plants have come through. The rate of seeding for a forage crop or silage is about 28lbs. per acre. Keep the maize growing. The harrows may be run over the crop when it is about 1in. or 2in. high, to keep the surface of the soil loose and to destroy weeds. The cultivator or horse hoe should be used as often as required, care being taken to keep the tines from going too near the young plants, as maize is comparatively shallow rooted. When flooding maize it it is better to have channels down the rows, and these may be thrown out with the cultivator, the proper tines for the purpose being used. Irrigate whenever the crop needs it. Maize may be fed any time if well grown, but stock relish it better after the plants have flowered. Included under the heading "Sorghum" are a number of varieties, but the best known for fodder crops are the grass sorghums, Sudan grass, Tunis grass, Johnstone grass, and sweet or saccharine sorghums. Amber cane is one of the best known of this variety. The cultivation is practically the same as for maize, but it will do better on lighter soils than maize, and is more drought resisting, grows rapidly in summer months, but makes little growth until the soil is well warmed. Where sown without irrigation, there is a danger of missing germinating rains if sown too late. The crop is generally sown by using every fourth hoe of the drill. Rate of seeding, 5lbs. to 10lbs. per acre, and the seed is often sown mixed with bonedust and may be broadcasted, using 10lbs. to 12lbs. to the acre and covering with light harrows. Sorghums on the whole are of less value for forage than maize, but they are more drought resisting, and give better second and sometimes even a third cut. Sorghum is always detrimental to a wheat crop sown in the autumn following the sorghum crop. It is ready for feed shortly after the seeds begin to form. Care must be taken when turning stock on to sorghum, because of the danger of poisoning by prussic acid, this is apart from ordinary digestive troubles to which stock are liable when turned on to a green crop. As the seeds begin to form, the prussic acid, which is in an unstable form, breaks down and finally migrates into the seeds in some other combination. Poisonous compounds disappear shortly after the crop is cut, so that the cut of sorghum should be allowed to wilt before feeding. It is dangerous to turn stock into the sorghum if the crop is sickly or yellow. Millets are better adapted to lighter soil than maize, and are said to be quite as drought resisting as sorghums. They respond well to irrigation and recover quickly after being cut. It is a crop that requires plenty of humus, and will do well if farmyard manure is worked into the winter fallow. The seed being very fine, it needs to have a fine seed bed. Sow in spring after

SUCCESSFUL FARMING
.. AND ..
TOP BRAND SUPER
GO HAND IN HAND.

HEAVIER DRESSINGS OF SUPER MEAN
INCREASED HARVEST YIELDS,
BETTER GRASS FOR STOCK,
IMPROVED VALUE OF LAND.

The Adelaide Chemical & Fertilizer Co., Ltd.,
CURRIE STREET.

the danger of frost is over. The seed malts readily, so that one should select a time for seeding when the soil is warm and moist. Use every fourth hoe when drilling, and sow at the rate of 3lbs. to 4lbs. per acre. When broadcasting use 6lbs. to 8lbs Cultivate the crop after each cut. The crop should be cut directly the head begins to appear. It makes a relatively coarse hay, and when fed in large quantities is inclined to act detrimentally to the urinary system of the stock. Millet has the same effect on the following wheat crop as sorghum. Of the artificial manures, ordinary super is as useful as any, both for maize, sorghums, and millets. It should be applied at seeding, 1cwt. to 1½cwts. per acre being used.'' Some members thought that the detrimental effect of sorghums and millets on the following wheat crops was due to robbing of moisture. Other members considered that it was mainly due to the poor seed bed preparation that the crop received, because of the necessity of having to wait for rains before being to able to fallow the land. It was also thought that summer crops robbed the soil of available plant food.

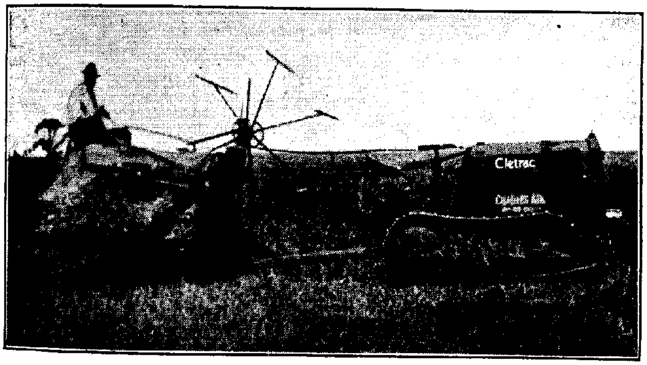
CINCTURING THE VINE.—Mr. J. E. Butler read a paper on this subject as follows:—''The practice of cincturing the vine is one that has been carried on in Greeece for many years. It was first introduced here and brought under the notice of currant growers by Mr. W. G. Grasby. Up to that time the production of currants in Australia was a very risky occupation, as the setting of fruit in most localities was a very uncertain matter, and consequently there were few profitable vineyards in the country. The introduction of the practice made the production of the grape a certainty, and gave a wonderful stimulus to the cultivation of the vine. The practice in short consists of making a complete cut around the stem or each arm of the vine, such an incision reaching right into the firm wood, its effect being to separate the continuity of the cells which are transmitting plant building sap between the upper and lower portions of the vine. Some persons utilise the single incision without taking out a ring of the bark, but to make an effective break in the continuity of the cells a certain amount of leverage is required to lift the inner edges of the bark along the line of the incision, and it is contended that this one heals with greater difficulty than where two parallel cinctures are made around and a strip of bark taken out to the width of about ⅛in. or 1-10in. The object of the cincture is temporarily to check the distribution of the elaborated sap. This check must be only effective long enough to allow the young newly formed berry to become firmly attached to its stalk. What takes place is as follows: —The incision is not sufficiently deep to cut off the movement of the crude sap sent up from the roots, but it is deep enough to make a break in the course of the returning sap which is flowing back from the foliage where it was elaborated into complete plant building material. In consequence of this the root action is retarded and branching is restricted. In the meantime the berries set. As soon as this setting is completed it is desirable that the cut caused by the cincture should be bridged over with growing tissue and the circulation of the sap go on unrestrictedly to develop the foliage and the grape. The cincture is applied when the caps or starlike corollas are falling freely from the flowers on the vines. Mr. Hamlyn said that he had asked Mr. Geo. Quinn (the Government Horticultural Instructor) which was the better, the saw or the knife. Mr. Quinn favored the knife, because the saw bruised the bark too much. Mr. Dux said that the size of the cincture depended on the circumstances of the vineyard. Strong, healthy growing vines needed a wider cut than weaker ones. Mr. Butler said that he favored ringing on the lighter classes of soil first and the heavier soils later. Ringing was better done a little late than too early. He thought that it did not matter much which instrument was used, the saw or the knife, provided that the saw was kept sharp and care was taken in using it. Mr. Lewcock mentioned the danger in using the new cincturing tool, of not getting quite deep enough in some vines and failure to take out sufficient bark. The tool was very quick in action. Mr. Dolan generally rung with the knife. Four years ago they were behind with their cincturing and used a hack saw, and he lost approximately 25 per cent. of his crop. Mr. Hague said that he heard that one man used to pinch back the shoots beyond the bunches in order to get a crop of sultanas. Mr. Jarman mentioned that he at times rubbed a little earth into the cut on the sunny side of the vine to protect the wound from the sun's rays. He found no disadvantage from the practice. Members agreed that sultanas and Gordos did not develop sugar when rung, and that currants appeared ripe before sugar was properly developed. Mr. Lewcock said that he understood the reason why Gordos often failed to set a full bunch was due to the physiological difference of the flowers of the Gordos from other heavy bearing grapes. The stamens of the Gordo flowers were very much shorter, and consequently when they were ready to burst they often could not force the cap off the flower quickly enough, and so fertilised the pistils of the same flower. The stamens and pistils of a grape vine flower were not ready at the same time, and in the heavy bearing crops and free setters the pollen was as a rule all gone from the stamens of the flower before the pistil was ready to receive pollen, consequently self fertilisation rarely occurred. With the Gordo the pollen was often kept back by the sap, which was not forced off sufficiently to enable all the pollen to escape.

WINDSOR.

September 5th.—Present: 15 members and two visitors.

Nitrogen and Its Use in Agriculture.—Mr. W. Prime delivered an address on this subject. The importance of nitrogen as a plant food had been recognised for a very long time, and it had been claimed that if some practical means of replenishing the soil with nitrogen were not discovered the world would eventually starve. There were natural supplies of nitrogen. The air was composed of approximately four-fifths nitrogen, and it was also found in the soil, usually combined with oxygen or some mineral matter, forming salts of nitrogen. Although nitrogen in the free state was only soluble in water to a very small extent, all nitrates were soluble, and from them the plant could obtain its supplies of nitrogen. Unfortunately, most plants could not directly

The CLETRAC TANK-TYPE TRACTOR
WITH THE CLETRAC LINE-DRIVE.



MAKES A ONE-MAN'S JOB OF ALL FARMING OPERATIONS
FOR ECONOMY, SIMPLICITY, AND POWER, CLETRAC TRACTORS FEAR NO RIVAL.
SOLE AGENTS—
CHARLES ATKINS & CO., LTD.,
CURRIE STREET, ADELAIDE.

use the nitrogen in the air, and up to the present few practical methods of making that nitrogen available to plants had been discovered, but the speaker felt confident that as the need for nitrogen became more acute for agricultural purposes science would find other ways. The processes of nitrification were being continually carried on in the soil by bacteria, and to facilitate the working of these bacteria the land should be well cultivated. As nitrogen, after a thunderstorm, was slightly soluble in water, when rain fell a certain amount was washed on to the soil. The application of superphosphate to the soil, it was explained, did not replenish the supply of nitrogen, and the opinion was expressed that heavier yields would follow the use of a complete manure.

LONE PINE, November 2nd.—The Government Poultry Expert (Mr. D. F. Laurie) visited the Branch and delivered an address "The Poultry Industry" before a gathering of 26 members and four visitors.

ROSEDALE, October 4th.—The monthly meeting of the Branch was held at the farm of Mr. G. C. Heinjus, of Sheaoak Log, where an inspection was made of the crops, &c., and after the afternoon's work a pleasant evening was spent, a number of ladies being present.

A further meeting was held on November 1st, when the Hon. Secretary (Mr. F. H. Wolf) gave a report of the recent homestead meeting at Sheaoak Log. It was decided to go into recess until February, 1923.

WATERVALE, November 27th.—Various subjects of local and timely interest were brought before the meeting, and an interesting discussion ensued.

WILLIAMSTOWN, December 1st.—The meeting took the form of a "Question Box," when several matters relating to work in the orchard and vineyard were brought forward for discussion. The subject "Dry Bible in Cows" was also discussed.

YORKE PENINSULA DISTRICT.

(TO BUTE.)

KILKERRAN.

October 5th.—Present: nine members.

Question Box.—The monthly meeting of the Branch took the form of a "question box" evening. Several questions of interest were asked. Replying as to whether, in erecting a fence, it was better to put up the wooden posts first, or the iron posts and wires first, Messrs. T. M. Geater and C. Heinrich expressed themselves as being in favor of putting up the strainers first, and the barb wire next, because that would form a line for the posts. The plain wires could be put in position next. The wooden posts could be erected last and the wires fixed to them. Mr. A. J. H. Cogan thought it depended on the nature of the soil. If the holes could be dug easily he would erect the iron posts and wires first, but otherwise he would put up the wooden posts first. As to the better method of straining wires, at the strainer or in the centre of the strain, Messrs. Keightley, J. W. Cogan, and T. Geater favored straining at the post, and Messrs. C. Heinrich and B. Koch in the centre, especially in long strains. Mr. C. Heinrich said the quickest way to strain in the certre of a line of fence was by means of two sticks, but the objection to that method was that it disfigured the fence. Mr. Keightley recommended washing super bags in sea water, as in his opinion the super was removed more quickly by that means than by using rain water. He suggested tying the bags in bundles of eight and lowering them over the side of the jetty. Mr. Geater also favored sea water, because in his opinion it toughened the bags. Super bags treated in that way were stronger than second-hand bags, and were suitable for seed wheat. Mr. J. W. Cogan preferred washing the bags in a pool of fresh water, it being essential, however, that the bags should be firm on the ground. He did not advise washing bags in a trough or tank for that reason. Messrs. B. A. Koch and C. Heinrich also favored the fresh water method, preferring that to the solution of bluestone, which latter method discolored the bags. Messrs. A. Wakefield and A. J. H. Cogan favored washing bags in sea water when procurable. In a discussion on the most suitable sheep-proof fence to erect, Mr. Geater considered no less than six wires should be used. Mr. Keightley thought six wires necessary, and seven wires for crossbred sheep. Mr. C. Heinrich thought six wires were sufficient. Mr. B. A. Koch also said six wires were ample, providing a good gauge be used. The height of the fence could be reduced if the top and next wire be barbed. Mr. Geater thought the only advantage a combined drill and cultivator presented over the separate implements was that by using the former the seeding would always be up to the cultivator, which was an advantage in the event of rain falling. Mr. Clem Heinrich contended that with the combined implement one man with 12 horses could do nearly as much as two men and 15 horses using the separate implements. Mr. Keightley used the combined implement last season, but it had proved a failure. He did not, however, condemn the method nor the maker of the implement. He had, however, since converted his combined implement into a drill. The combined implement might be a labor saver, but from his experience not a time saver. Mr. Keightley ventured the opinion that T iron posts 1in. x ⅛in. would not last much longer than five years when erected near the sea coast. Mr. A. J. H. Cogan gave them a life of eight years, the posts not being affected much above ground, but rusted badly beneath the surface. Mr. B. A. Koch complained that most of the posts supplied now were steel, and advised members in future to specify iron posts when ordering, as the latter were not so liable to rust as steel. In replying to a question as to the distance posts should be apart, Mr. R. Wakefield thought there should be four iron posts spaced about 12ft. apart between each wooden post. Mr. Keightley thought a wooden post every chain with five droppers between was preferable. Mr. Geater favored wooden posts 18yds. apart with three droppers between if a single barbed wire be used. If two barbed wires, then the distance between the wooden posts could be increased. Mr. A. Wakefield favored five droppers between each wooden post for fences along a roadway, but for division fences more droppers and fewer wooden posts would meet the case. Mr. B. A. Koch considered division fences should be stronger than those along a roadway, and recommended for division fences that wooden posts be 33yds. apart with 8 iron posts between, and for fences along a roadway wooden posts 44yds. apart with 11 iron posts between each post. He used two barbed wires. Mr. A. J. H. Cogan also supported the view that division fences should be stronger than roadway fences. In discussing the distance strainer posts should be apart, Mr. Cogan favored a strainer every five chains. Mr. Keightley thought seven chains apart sufficient. Mr. R. Wakefield supported the five-chain strain. Mr. Sawade said the longer the strain the better, and, provided the line be straight, thought 40 chains apart not too far to space strainers. The longer strains had the advantage of permitting repairs being effected more quickly than would be the case with short strains. Mr. B. A. Koch, in supporting Mr. Sawade, considered it a waste of time spacing strainers five chains apart, and suggested that 40

APPOINT THE—

EXECUTOR TRUSTEE AND AGENCY COMPANY

OF SOUTH AUSTRALIA, LIMITED,

Executor and Trustee of Your Will.

Established, 1880. Estates and Trust Funds (1922) £5,105,442. Write for our Booklet.

DIRECTORS:

W. Herbert Phillipps, Chairman.

John Barker. | G. J. Cowie.

A. G. Rymill. | J. H. Goose.

Pastoral and Agricultural Inspector .. Charles Grieve.

Manager .. .. E. W. Williamson.

TEMPORARY PREMISES—

11, GRESHAM STREET - - ADELAIDE.

chains apart was not too long a strain. Mr. J. W. Cogan, in considering the question as to whether crops grew better on old tracks or not, said he had seen a good crop on an old road. Mr. Sawade thought it depended largely on the nature of the soil. An old track through sandy or rubbly soil would not grow a crop, but on clayey and loamy soils the best crops invariably grew on old tracks. Mr. Geater referred to an old track he had seen ploughed which grew a magnificent crop, whilst the adjoining crop was badly affected by "takeall." In considering the most profitable cattle for farmers to keep, Mr. J. W. Cogan favored the milking Shorthorn, as animals of that breed were deep milkers and provided a good carcase afterwards. His second choice went to the Hereford. Mr. Keightley preferred the Holstein. He considered that Herefords were suitable for beef, but very poor milkers.

MAITLAND (Average annual rainfall, 20.08in.).

November 4th.—Present: 14 members and three visitors.

The President (Mr. O. W. Jones), presented Mr. H. G. Tossell, M.P., with a Life Membership Certificate of the Agricultural Bureau. Mr. Tossell suitably replied and eulogised the work that the Bureau was doing for the primary producer. Further subjects, including "Diseases of Wheat Crops" and the "Yorke Peninsula Crop Competition," were brought forward for discussion. In answer to a question regarding the use of tractors in America, Mr. H. G. Tossell, M.P., stated that, although tractors in America could be purchased at one-third of the cost paid in Australia, and fuel was proportionately cheaper, American farmers generally did not consider them a complete success under all weather conditions. It was decided that the next meeting of the Branch should be held on the first Saturday during February, 1923.

PASKEVILLE (Average annual rainfall, 16.10in.).

October 31st.—Present: 16 members.

The Hon. Secretary (Mr. J. Prouse) read a paper entitled "The Farmer," wherein it was suggested that generally farmers might give more attention to business methods. The writer of the paper detailed the progress that had been made in the sphere of production during the past 40 years, and contrasted the interest which the farmer took in marketing, pointing out the advantages of co-operative efforts.

WEAVERS.

October 2nd.—Present: 11 members.

Dairy Cows.—"When starting with dairy cows, avoid cross breeding," said Mr. Geo. Bishop in a short paper dealing with the above subject. The speaker favored the Jersey cattle, because they did not eat so much as some of the larger breeds; they were also good creamers, docile, and usually had a long period of lactation. Much of the success of the animals depended on feeding, and in order to provide the herd with good, early winter feed, he suggested sowing Cape barley after the first winter rains. When feed was becoming scarce, chaff, with a little oats and bran should be given to the cows. If a good supply of water was available, a plot of lucerne should be established for summer feed. In the discussion that followed, Mr. J. Sheriff considered the milking Shorthorn the best all round utility cow. Mr. W. Anderson gave pride of place to the Jerseys, and he thought the natural pasture was not rich enough for the Shorthorns. Mr. H. Cornish said the larger supply of milk that was obtained from the Shorthorn enabled the farmer to keep more pigs, which meant an increased return from the by-products. Mr. E. Anderson urged that the Government should inspect bulls and condemn those that were mongrels. Mr. Dodd emphasized the necessity for selecting cows of a good milking strain. Mr. Dodd also gave an account of an experiment he was trying with "Hubam clover."

PASKEVILLE, November 27th.—The meeting was devoted to matters relating to the forthcoming field trial of harvesting machinery to be held on the local Bureau block on Wednesday, January 17th, 1923. Mr. J. P. Pontifex gave an interesting account of his recent trip to England.

WESTERN DISTRICT.

COLLIE.

November 8th.—Present: 11 members and visitors.

Dam Sinking.—Mr. A. Rowen, who read a paper dealing with this subject, said the first work in preparing for the excavation of a dam, after the site had been chosen, was that of taking the levels of the land. Next the square of the dam should be pegged out. If the dam was to be a square one, a plough furrow should be run around the pegs. Where the surface was at all level it was advisable to take one "floor" out by ploughing in an easterly and westerly direction, the next ploughing should be north and south, and any subsequent ploughings done in alternate directions. After the dam had been marked out a start should be made by ploughing a "land," say, 4ft. in width on the two opposite sides of the bank. After the completion of the ploughing the scoop should be started by running empty over the first land, and allowing it to fill when going out on the opposite side. When coming back the scoop should pass over the land where it subsequently filled and pick up a load of earth on the opposite side. Alternate ploughings should then be made until the middle was reached. Every foot of depth would require a measurement of 18in. to be made on the inside of each corner peg. Whatever measure was taken, it was most important to make a plough furrow right around the corner pegs of the dam, because the furrow would serve as a guide to avoid the scoop cutting into the latter. In starting the banks one should be careful to place the earth that had been excavated in such a position that it would not fall back into the dam. It was a good plan to pave the latter and the inlet and overflow with stone flags or concrete When the dam had been completed two small drains, one around the top and another at the bottom of the bank, should be made and connected with the concrete drain of the inlet to prevent creeps being cut into the bank of the dam. In order to minimise evaporation, Mr. Rowen suggested that the dam should be at least 10ft. or 12ft. deep.

NECESSARY FOR THE COUNTRY

"MONIER"

SEPTIC TANKS CONCRETE PIPES.

MADE IN A VARIETY OF SIZES.

FULL PARTICULARS FROM

S.A. REINFORCED CONCRETE Co.,

BOWMAN BUILDINGS. TEL., CENT. 2593.

KOPPIO (Average annual rainfall, 22.40in.).

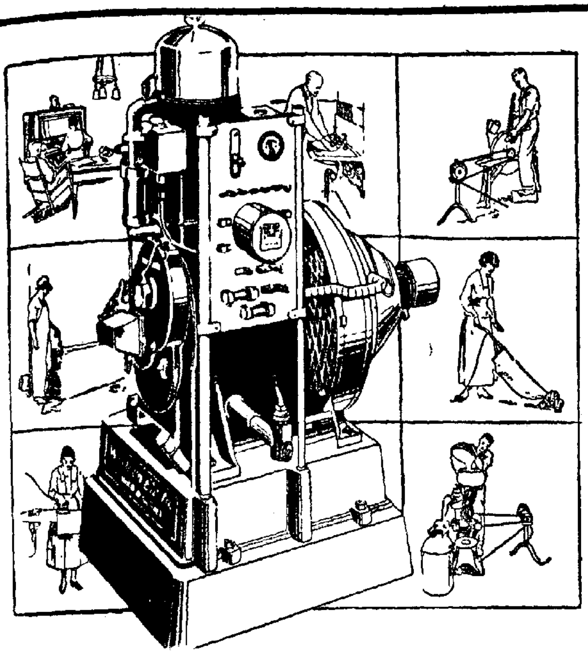
November 14th.—Present: six members.

Homestead Meeting.—The monthly meeting of the Branch was held at Messrs. Richardson Bros.', when members took the opportunity of inspecting the crops and livestock. A plot of Queen Fan wheat, which was expected to yield 15bush. to 20bush. to the acre, was first inspected. A crop of Scotch Grey oats that were being cut for hay then came under notice, Mr. Richardson estimating a cut of 1 ton to the acre. A crop of Calcutta oats in an adjoining paddock gave promise of a heavier cut than the Scotch Grey. A heavy crop of Marshall's No. 3, to be cut for hay, also received favorable comment. This crop had been fed down for three weeks towards the end of the winter with sheep, at the rate of three sheep to the acre, and showed no signs of the grazing. An exceptionally fine crop of Queen Fan was also observed. Quite a feature was the superior growth of the crops sown during May. Those sown later in the season were in many cases poor. Late Gluyas sown on stubble land in June gave promise of a fair yield. The stock were in excellent condition, and receptacles for salt licks were noticed in the fields.

LAKE WANGARY.

November 4th.—Present: 11 members and one visitor.

Working Heath Land.—Mr. A. E. Hawke contributed the following paper on this subject:—"In this district, where the country is chiefly ironstone gravel over clay, with an average rainfall of about 20in., and usually with comparatively little rain in the spring, wheat growing is a very uncertain proposition. One year we may get a fair return, but taken as an average we cannot expect more than about 6bush. This, at the present high price of super and agricultural implements, will hardly pay expenses. Oats certainly do much better, but as hay or grain it is very little in demand. Barley is the only cereal from which we can receive a fair return, and even with this we sometimes have to accept a price that does not pay for the cost of growing it. My idea is that if we were to grow cereals, chiefly oats, rye, and Cape barley (oats for preference) and feed them to sheep as greenfeed we would do much better. The oats could also be left to ripen and be fed off about March, when feed is getting scarce. Oats in this way should carry about a sheep to the acre. This would enable us to carry considerably more sheep, and we would very soon improve the carrying capacity of our land. Also, we would never have a complete failure, whether the year was wet or dry, as we do with our present method of growing cereals for grain. There is yet another way in which we can improve the stock-carrying capacity of our land. It has been tried very little in this district. I have proved to my satisfaction that it will pay us to sow subterranean clover, at the rate of a pound to the acre, on every acre we crop. I believe it would pay to sow 2lbs., thereby getting a thick growth of feed more quickly; but as seed costs 3s. per pound, perhaps the expense would seem rather heavy to lay out in one year. Another plant that does very well here, and spreads very rapidly, is English dandelion. This is a summer growing perennial, and should be grown about September. It remains green through the summer and produces a lot of feed, more especially if we are favored with summer rains. The seed is fairly expensive—about 6s. per pound—but it is very light, and ¼lb. to the acre would be sufficient, and would soon spread if allowed to seed, because the seed has a fluffy end, similar to thistle seed, and is blown about by the wind. I might also mention kale and Sudan grass. Both of these do well, provided the weather conditions are suitable. To get kale to germinate properly it should be sown when the ground is warm, but not later than the middle of May, but April for preference if there is enough moisture to bring it up. It should not be sown earlier than the middle of September. Once established, this fodder will last—with judicious feeding—for five years. Sudan grass is a summer annual, and should be sown on fallow land about the middle of September. The success or otherwise of this will depend on the summer rains. I feel sure it would pay to top dress one grass with super, and yet it has been tried very little in this district. The application of, say, 80lbs. of super to the acre on our grass lands would at least double its stock-carrying capacity for three years, and probably longer, and improve the class



Western Electric

POWER and LIGHT

Helps all the Family

INSTAL Western Electric Power and Light, and you will have the regular hard-working, money-saving service of electricity to help your every task.

"Western Electric" lights your house and outbuildings, and runs on about the same amount of Kerosene that you now burn in dirty, dangerous, disagreeable lamps.

You can count on "Western Electric," too, for economical and efficient pumping of water for the home and stock, for milking, separating, cornshelling, and chaffcutting.

The Domestic Servant problem is solved for you by an Electric Clothes Washer, Dish Washer, Vacuum Sweeper, Portable Sewing Machine, etc., all operated by "Western Electric" current.

Ask for our Special 20-page Book. Mark the other booklets you want, and mail the coupon to-day.

Agents for South Australia:

NEWTON McLAREN Ltd.
Leigh Street, Adelaide

WE 676

MARK AND POST COUPON TO DAY

Please send post free the Booklets marked with a cross (X)

W.E. Power and Light.
W.E. Clothes Washer.
W.E. Dish Washer.
W.E. Vacuum Sweeper.
W.E. Sewing Machine Motor.
W.E. Portable Sewing Machine
W.E. Electric Iron.

Name ____________________
Address ____________________

of feed, as clovers are encouraged to grow by the application of super. I believe it is a better proposition, provided it is practicable, to fallow the ground in the spring and sow a bushel and a half of oats, or, even better, cross drill a bushel each way, and drill the super in with the oats.'' A good discussion followed the reading of the paper, the majority of the members agreeing with the views of the writer.

MOUNT HOPE.

November 11th.—Present: eight members.

How to Train a Sheep Dog.—Mr. R. L. Myers, who read a paper dealing with this subject, said the puppy should be taught to follow its master directly it was able to travel a fair distance. The young dog should be treated at all times with kindness, but, at the same time, the master should be firm. If the animal was watered and fed regularly and treated as a companion it would, in the majority of cases, prove a good friend to its master. Many people made the mistake of keeping the dog on the chain for too long a time, with the result that when it was allowed its freedom it became too rough, and after a few hours work knocked up because of sore feet. Careful judgment in handling and working the puppy was most essential. Too much should not be expected at the start so long as the dog took an interest in the sheep, but if it was sulky it would prove rather difficult to manage. On no account should the dog be allowed to hunt rabbits when with the sheep. When the animal was commanded to work around the sheep, it should be made first to come back to the person tending the sheep, otherwise there was a danger of the dog working too closely to the flock and cutting off some of the sheep. After the dog had become fairly well educated and tractable, the shepherd should walk ahead of the flock and allow the dog to drive the sheep from behind. In discussing the paper Mr. Speed expressed the opinion that a dog should be thoroughly trained by one man before others were allowed to use it. Mr. Doudle thought that a dog should not be fed regularly because its work would make its feeds irregular and it would be likely to shirk duty when meal time came round. Mr. G. A. Vigar was of the opinion that sheepowners in that district did not have enough work to train sheep dogs. Mr. J. H. Vigar said that when a dog was called in it should be made to go behind, instead of coming between the flock and its master.

PYGERY.

November 5th.—Present: eight members.

Side Lines on the Farm.—The Hon. Secretary (Mr. W. M. Heath), who read a short paper dealing with this subject, first mentioned the advisability of keeping a flock of fowls on the farm, preferably White Leghorns for egg production and Orpingtons for table birds. On account of the scarcity of water he did not think it wise to keep more than one brood sow, and he gave first choice to the Berkshire breed. That breed crossed with a Mid-York would produce excellent bacon pigs. Regarding dairying as a side line, Mr. Heath said one again had to consider the water supply, and if two cows were kept they should fulfil the dairy products of the average farm. For the wheatgrower he thought a milking strain of the Shorthorn the best breed of cattle, because the cows were profitable creamers, and would readily fatten for beef purposes. It was decided to go into recess for two months.

ROBERTS AND VERRAN.

November 2nd.—Present: eight members.

Fencing.—Mr. M. Masters, who read a paper dealing with this subject, said good fences were one of the necessities of every farm, but too often the farmer contented himself with the erection of temporary fences when permanent ones should have been erected. Poor fences, he considered, were responsible for making ''fencers'' of many of the stock. Wooden posts were very scarce in that district, and, as the farmers had to obtain posts from outside sources, he suggested that they should endeavor to obtain the best material, and he preferred pine to any other timber. The boundary fence should be netted, with two barb wires on top about 1ft. apart. The fence should be 3ft. 6in. high and the posts 2ft. in the ground, an extra foot being allowed for strainers. Posts should be half a chain apart with one iron post between. The strainers he would put 7½ chains apart. The top of the post should be cut off level, so that the wire could be tied down lightly on top of the post. The division fences should consist of two barb wires 1ft. apart and four plain wires 6in. apart, wooden posts ½ chain apart with one iron post between and the wires strained tightly. Where possible the farm should be divided into 200 acres or smaller paddocks to enable the farmer to change his stock from one paddock to the other. The homestead should be as near the centre of the farm as possible. If the farm was divided with a central fence from one end to the other, a race could be made for stock to travel along to the paddocks. Gates could be put across the race in order to stop stock going past the paddock that had been allotted to them. There should be two gates in each paddock, one at the race and one on the side. Shoots should be cut along all fences and rubbish cleared away where land was subject to drift, thereby enabling the drift to pass through instead of banking up, and in time covering the fence. All stockyards should be made of timber to prevent injury to stock from barb wire.. In the discussion which followed Mr. C. Smith said he preferred ti-tree posts to pine as they did not rot so quickly. Mr. B. Evans favored wooden posts about 4yds. apart for boundary fences with two barbs and netting, and heavy wooden posts, 12yds. apart with two iron standards between them, for divison fences. He would make these sheep-proof with five plain and one barbed wire. Mr. H. Simmons favored swamp ti-tree posts. He thought that where only two wires were used, the bottom wire could be lowered slightly. He urged the necessity for substantial boundary fences. Mr. C. Masters said netting should be trenched about 6in. on the boundaries to keep the rabbits from burrowing underneath. Where netting was used on division fences a plain wire strained through the bottom would keep it in place. In replying to criticism, Mr. Masters maintained that pines were to be preferred to ti-tree posts, because it was difficult to get the latter heavy enough. He thought sheep were liable to get through a six-wired fence that had only one barb. In his opinion 4yds. was too close to put wooden posts when one had to buy them, but an extra iron post could be put in between if necessary. Where the division fences were not made sheep-proof with plain wire he would use pig netting.

METROPOLITAN ABATTOIRS, ADELAIDE.
MANUFACTURERS OF
MEAT MEAL FOR PIGS
Read Report of trials made by PROF. PERKINS, *Journal of Agriculture*, January and July, 1921.
MEAT MEAL, BONE MEAL, BONE GRIT FOR POULTRY
For full information on above write to
The GENERAL MANAGER, Metropolitan Abattoirs Board, Box 573, G.P.O., Adelaide.
ALSO MANUFACTURED
BLOOD MANURE
BONE MANURE

SMOKY BAY (Average annual rainfall, 13.06in.).

September 30th.—Present: 10 members and two visitors.

Mr. S. Denton read a paper, "Haymaking," and an interesting discussion followed. The Hon. Secretary (Mr. G. Lovelock) read extracts from the *Journal of Agriculture*, "Tooart Gums on Eyre Peninsula," and "Seeding Inquiries."

Conservation of Fodder.—A further meeting was held on November 4th, when a paper dealing with the subject, "Conservation of Fodder," was read by Mr. G. Crocker. In many cases, especially on new holdings, he said, the young farmer did not have sufficient labor to conserve adequate supplies of fodder. Another point that arose was the fact that a good deal of capital would be bringing in no direct return, but, on the other hand, should a drought be experienced, the farmer who had a reserve supply of fodder on hand would not have to pay exorbitant prices for feed, and he would in all probability be able to dispose of some of the fodder at a remunerative figure to his neighbors. An argument sometimes used against conservation was the rapid deterioration of the fodder, but that could be reduced to a minimum if proper care was taken of the stacks. Hay was undoubtedly the best method of conserving fodder, and it was best to sow the crop intended for cutting on fallow land. If, however, a good burn could be secured from a stubble paddock, he advised using that land and sowing oats, as that crop would be one that would form part of the rotation. If possible, 50 acres to 100 acres should be cut every year for hay, the remainder of the stubble land could also be sown with oats, part being reaped and the balance fed off by the stock. Owing to the trouble experienced with mice, oats should be put in a mouse-proof receptacle. Galvanized-iron tanks, bins, or old stripper boxes would answer the purpose, but if circumstances permitted a silo or mouse-proof barn was preferable. Straw could also be conserved, and when chaffed could be used to supply the bulk in feed. Unless the straw was cut with the binder it only made an indifferent fodder. A large amount of cocky chaff should also be kept until the following seeding to see if it would be required. Cocky chaff did not give very satisfactory results when kept for any length of time. If the ground was in a suitable condition he preferred to cut all the oats with the binder, because they could then be stacked and threshed when convenient. By that means the straw could also be utilised.

On Saturday, December 6th, Mr. W. Gooley gave an address, "Engines." The speaker illustrated his remarks with a number of interesting diagrams, and replied to numerous questions.

YADNARIE.

October 31st.—Present: 12 members and two visitors.

Farm Buildings.—Mr. A. C. Kruger, who read a paper dealing with this subject, said because there was only a very limited supply of native timber that could be utilised for building purposes in their district, he favored structures made of reinforced concrete. Such buildings could be erected without any skilled labor and sand could be obtained without any inconvenience. For walls he preferred a mixture of five parts of metal, two and a half of sand, and one of cement. If good gravel could be obtained that could be used in the proportions of six of gravel to one of cement, and reinforced with steel rods placed 9in. apart. If that was considered too expensive a very good wall could be erected by placing lime concrete—three to one—between planks. For floors he considered that a mixture of six parts of metal, four of sand, and one of cement would prove most serviceable if put down in foot squares.

BUTLER, November 6th.—Short speeches were delivered by Messrs. A. H. Pfitzner, N. G. Stewart, C. B. Jericho, A. J. Parsons, C. Stewart, and A. Tilly on the subject "The Best and Cheapest Method of Reaping—Reaper or Harvester." Members were of the opinion that in a bad season it was best to use the reaper.

CARROW, November 11th.—The Instructor for Mallee Lands (Mr. C. P. Hodge) visited the Branch and delivered an address, "Farming Practices in the Mallee."

GREEN PATCH, November 6th.—The monthly meeting of the Branch was held at Mr. C. T. Parker's homestead. Mr. Sage tabled samples of barley which he thought were affected with a root disease. The subject "Marketing Wool" was also brought forward for discussion. Mr. Parker introduced the subject "Summer Fodders," and thought every farmer should grow a summer crop on the fallow instead of allowing it to lie idle. The Branch decided to go into recess until February, 1923.

LIPSON, November 14th.—The Instructor for Mallee Lands (Mr. C. P. Hodge) visited the Branch, and delivered an address, "Farming Practices in the Mallee."

MALTEE, October 6th.—Before an audience of 12 members and one visitor Mr. E. W. Wheaton contributed a paper dealing with the marketing of wheat.

SALT CREEK, November 18th.—Mr. K. Fraser read a paper, "Principles of the Shearing Season." Several other subjects were brought forward for discussion.

YADNARIE, August 3rd.—To an audience of 11 members and two visitors, Mr. A. A. Jericho read a paper, entitled, "Better Surveys for Inferior Land," in the course of which he discussed various aspects of the survey and allotment of Crown lands.

EASTERN DISTRICT

(EAST OF MOUNT LOFTY RANGES)

MONARTO SOUTH (Average annual rainfall, 14in. to 15in.).

November 4th.—Present: 14 members and two visitors.

Raising Lambs for Market.—Mr. H. Frahn, who contributed a paper dealing with this subject, expressed a preference for a six-tooth large-framed Merino ewe mated with a Border-Leicester ram for the production of lambs

W. & W., 840

Cyclone

Metal Gates and Fences.

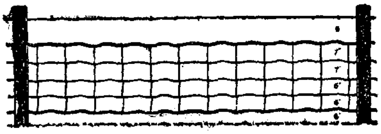


Fig. 7.—5-line Special Cyclone Spring Coil Fence.

The Cyclone Special Sheep Fence, here illustrated, is recognised as the best fence for cross-bred sheep. The top and bottom lines are No. 9 gauge heavily galvanized steel wire; intermediate line wires, No. 11 gauge, with cross ties of No. 13 gauge every 12 inches, immovably fixed to the line wires. You need fewer posts with a Cyclone Spring Coil Fence, and it is very easily erected.

ILLUSTRATED CYCLONE CATALOGUE ON REQUEST

CYCLONE Pty., Ltd., EXCHANGE BUILDINGS PIRIE ST., ADELAIDE.

Also at Swanston Street, Melbourne, and Ash Street, Sydney.

for market. The ewes should be mated with the rams about the end of October or early in November, so that the lambs would be ready for the market early in the season. If the lambs were in "fat to prime condition" he suggested that they should be despatched to the city markets. Every three or four weeks the ewes should be given a change of pasture. That would help to keep them in good condition, and give the pasture a chance to keep fresh and sweet. A supply of water should always be available, in a convenient position for the flock. A month before lambing all the ewes should be crutched; in fact, that practice should apply to the whole of the flock, care being taken not to handle the ewes carelessly. The wool should also be clipped away from the eyes of all the sheep. In the discussion that followed, members were of the opinion that for the farmer with only a small flock of sheep, it was better for him to confine his attention to Merinos, with the idea of securing wool of a high quality. For the surplus lambs such a farmer should be prepared to take a reduced price.

PARUNA.

November 3rd.—Present: 12 members.

Mixed Farming.—Mr. A. A. Paget read a paper on this subject, in the course of which he said:—"To my mind a farm of 800 to 1,000 acres would be most suitable for mixed farming. I would suggest putting in 500 acres altogether, say 300 acres with wheat, 100 acres with oats, 50 acres with barley, and the remaining 50 acres with hay. With a 1,000-acre block that would leave 150 acres to fallow and two 100-acre paddocks for the sheep, and 100-acre paddock for grazing for horses and cattle, and three small handy paddocks of 15 acres each, two of which could be sown with barley to provide early feed for the horses and cattle. The 200 acres would carry 100 to 130 breeding ewes, and the return from the wool and lambs should be about £100 per annum. Nine team horses should prove sufficient to work a farm this size, providing up-to-date implements are used. I would not advise rearing foals to replace old animals. A foal, from the time it is born until it is 3 years old, costs 2s. per week for its keep, making a total of £18 2s. Besides that the mare cannot be worked for about six weeks of the year, whereas a very fair working horse can be bought for from £18 to £20. Four good cows should average 5galls. of cream a week for about nine months of the year, besides keeping the household supplied with milk, butter, and cream. A lucerne plot, where possible, would help considerably during the summer months. With an average of seven pigs per litter, two sows would enable one to market 28 pigs during the year, these should be sold as baconers when 5 or 6 months old and weighing about 120lbs. I consider that poultry is one of the most profitable side lines when given proper attention. An excellent fowl for the farm is a cross between Black Orpington hens and White Leghorn roosters. They are good layers and make splendid table birds." During the discussion which followed, Mr. G. H. Flavel said 1,000 acres was too small for the average mallee farm. Mr. Ward said that if farmers did not breed horses it would encourage horse breeders to produce a superior class of animal.

BLOCK E, November 28th.—The Hon. Secretary (Mr. T. F. Spurling) presented a report of the work performed by the Branch during the past year. The report showed that at the inaugural meeting held in January, 1922, 27 members were enrolled, at the conclusion of the year 64 members were on the roll, and that 10 meetings had been held, with an average attendance of 21 members. The election of officers then took place.

GERANIUM, November 7th.—The Government Poultry Expert (Mr. D. F. Laurie) attended the meeting and delivered an address, "The Poultry Industry." There was an excellent attendance of members, and several ladies were present.

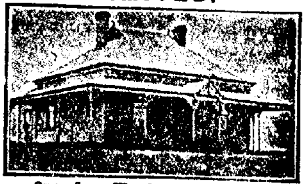
MARAMA, November 23rd.—On Thursday, November 23rd, the Instructor for Mallee Lands (Mr. C. P. Hodge) visited the Branch and delivered an address, "General Treatment of Mallee Lands." At the conclusion of the address the meeting took the form of a social gathering. It was resolved that the next meeting of the Branch should be held on March 5th, 1923.

COWELL BROS. & COY.,
LIMITED.

Timber Merchants.

Wood and Iron Houses a Specialty.

ADELAIDE: Victoria Square.
PORT ADELAIDE: New Dock.



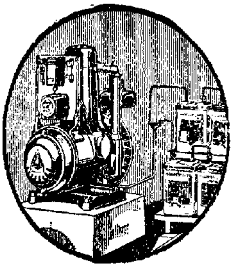
One of our Wood and Iron Houses (from a photo.)

Fence Droppers, Sheep Gratings, Wool Tables, Beehives, &c.

Wholesale Ironmongers.

Estimates and Price Lists on Application.

HEAD OFFICE:
PARADE,
NORWOOD.



DELCO-LIGHT
The complete Electric Light and Power Plant
USED IN EVERY CLASS OF HOME, BUSINESS AND PUBLIC BUILDING.
25 MODELS. PRICES FROM £110 0s. 0d.
TOTAL SALES, 400.
The S.A. Government have now Purchased 30 Delco-Light Plants.
Catalogue, Advice, Prices—Free.
S.A. Distributors—
PARSONS & ROBERTSON, Ltd., 87, Worando Buildings, Grenfell Street, Adelaide.

CHARLES WHITING,
GRAIN AND PRODUCE MERCHANT,
NO. 2, CENTRAL MISSION BUILDINGS, FRANKLIN STREET, ADELAIDE.
CASH BUYER OF
WHEAT, OATS, BARLEY, PEAS, CHAFF, &c.

Special attention devoted to Sale and Purchase of Best types of Wheat, Oats, Barley, Lucerne, Rape, Sudan Grass, and other Cereals.

RAMCO, October 30th.—A discussion took place on the A.D.F.A. organisation, which was introduced by Mr. W. Robinson. Mr. F. G. Rogers tabled an exhibit of diseased peach tree shoots of the Elberta variety.

WAIKERIE, November 29th.—Mr. W. H. Murray delivered an address, "Spraying," and an interesting discussion followed, in which the speaker replied to a number of questions.

WINKIE, November 6th.—Mr. H. F. Levein, of the Berri Branch, attended the meeting and delivered an address, "Dehydration of Fruit," to a gathering of 24 members and three visitors.

SOUTH AND HILLS DISTRICT.

CLARENDON (Average annual rainfall, 33.67in.).

October 30th.—Present: 11 members.

The Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis) attended the meeting and delivered an address, "The Work of the Agricultural Bureau."

A further meeting was held on November 3rd at Mr. A. A. Harper's "Park Farm" homestead. A trial of implements suitable to the locality aroused a considerable amount of interest. The Honorary Secretary (Mr. T. B. Brooks) exhibited a machine for making cement blocks, and Mr. R. Morphett gave a demonstration with his power spraying outfit. The crops and orangery were then inspected, and the draught stallion owned by Mr. Harper was much admired by the visitors. Afternoon tea was provided by Mrs. Harper. The meeting was continued in the evening, when a report of the Hills Conference was given by Mr. J. Potter.

CURRENCY CREEK.

November 3rd.—Present: 14 members.

Preparing the Farmer's Clip for Market.—In the course of a paper under the heading "The Get-up of a Farmer's Clip—500 Sheep and Under," Mr. D. J. Gordon mentioned that the farmer with 500 or 600 sheep should pay just as much attention to the "get-up" of his clip as the station owner. By that he did not mean to suggest that the farmer should make as many classes, but he should exercise just the same amount of care in classifying the fleeces, for it was well known that farmers' clips, being small, did not invite the same competition as the big lots from the stations, and if the small clips were carelessly "got up" they would only be taken by speculators at a very small figure. The paper then read as follows:—"The shearing should be done in a shed free from all chaff, &c., and on a clean floor. The fleece should be picked up carefully by the breech and thrown on to the rolling table outside uppermost, where it should be skirted regularly, not necessarily deeply, in fact, when the sheep have been properly breeched, only the dirty edges need be removed. The sides should then be turned in, one slightly more than the other, and the fleece rolled from the breech to the shoulder. In dealing with Merinos the extra heavy, matted, or discolored fleece should be kept out and broken up and placed with the skirtings; and with Crossbreds the extra coarse wool should be kept out and put with the Lincoln, or whatever long wool has been used in the crossing. It is advisable to pack pieces, bellies, stains, and locks separately, even if they have to be put in bags, for mixed lots never bring their full value, as the wool buyer bases his price on the lowest grade in the bale. If the clip is only slightly burry it might pay to take the burry parts off, thereby making the wool more attractive, but this is a matter for the man on the spot to decide. When about 100 well-woolled lambs are to be shorn, the owner, in handling the clip, should take the light, clean wool out and pack it separately. The bales should be plainly branded with the owner's name, or the name of his farm, and the contents. Insufficient branding leads to trouble, and often loss. I think it is a great mistake to put a reserve on wool, as the brokers know the value of wool and will not let it go under the price it ought to bring. In conclusion, I would advise the farmer to keep as near to the one kind of sheep as possible, for by so doing he does away with so many small lots, and will, therefore, receive better returns."

KANGARILLA.

October 7th.—Present: 23 members and 36 visitors.

The monthly meeting of the Branch was held at the homestead and poultry farm of Messrs. Geo. Butler & Sons. On arrival at the farm an inspection was made of the fowl yards, colony brooder, which contained about 500 sturdy chickens about 5 weeks old, cold brooders, and sectional brooder house. The incubator house was then inspected, where about 1,200 eggs were being hatched. The White Leghorn hens were kept in large houses built of iron on three sides and wire netting half way down the front, the lower 3ft. or 4ft. and floors being constructed of concrete. An ample supply of clean sand was provided for scratching purposes, and spacious runs adjoined each house. Dense hedges of wormwood provided ample shelter from the prevailing wind. Mr. Butler and his brother possessed about 660 laying hens of the White Leghorn strain, and a large number of pullets were just commencing to lay. Mr. Butler marketed an average of 250doz. eggs per week. Mr. D. F. Laurie (Government Poultry Expert) lectured to those present on utility poultry farming, and emphasized the importance of collecting the eggs each day. If that was done, he said, the State would save £80,000 per annum which was now lost on account of eggs being sent to market which were unfit for human consumption. Mr. C. F. Anderson, Secretary of the Infertile Egg Association, then outlined the aims and objects of that institution. Afternoon tea was provided by Mrs. Butler, assisted by Mesdames Holder, Crouder, G. Nicolle, and Miss Williams. Mr. T. B. Brooks exhibited a mould which he used for the manufacture of concrete blocks.

At a subsequent meeting, held on November 3rd, Mr. E. Butler read an article from the *Journal of Agriculture* entitled "The Breeding of Pigs."

RAPID BAY.

November 4th.—Present: 18 members.

Rabbit Destruction.—"The rabbit is one of the greatest pests the farmer has to fight, but it is impossible to keep the rodents under reasonable control if proper methods are not adopted for their destruction" said Mr. R. Walsh in a paper under the above heading. The best way to deal with the pest was for the farmers to inaugurate co-operative measures. For instance, when one farmer commenced to lay poison all his neighbors should do likewise. The speaker recommended the use of a fair quantity of pollard when the baits were being prepared, because that prevented the baits becoming hard. The best time to distribute the baits was just after a fall of rain. A good furrow should be made in the ground, and, in order to obtain that, the farmer should see that the share of the plough was properly sharpened. After the paddocks had been well treated with baits, ferrets and traps should be used. When the ferrets had

DON'T PLANT FRUIT TREES

Until you have seen the

PLANTERS GUIDE

Post Free to any address. Send now to the

BALHANNAH DECIDUOUS NURSERIES, BALHANNAH, SOUTH AUSTRALIA

For your copy.

These nurseries are devoted exclusively to the propagation of Highest Grade Deciduous Fruit Trees, and can offer prime trees in leading commercial varieties for the coming planting. Inquiries solicited. Business established over a quarter of a century.

H. N. WICKS, Proprietor.

been through the warrens the burrows should be filled in to keep other rabbits from going into the burrows. Before the ferrets were worked they should be fed, otherwise there was a danger of their remaining in the burrows to eat the first rabbit that they killed. Especially did he recommend the use of the ferrets when there were many young rabbits about the paddocks. All harbors for the vermin should be removed if one wished to clear the paddocks. An interesting discussion followed, the general opinion of members being that the best methods to adopt were the use of a good poisoned bait in the summer, with ferrets and traps during the winter. Ferrets had been used extensively in the Rapid Bay district, and all members endorsed the good work that had been performed by them.

SHOAL BAY.

November 28th.—Present: seven members.

Care and Management of the Farm Team.—Mr. A. Nash, who read a paper dealing with this subject, expressed the opinion that a team of eight horses properly cared for would do all the work on the average farm in the Shoal Bay district. At the commencement of seeding and harvesting operations he advised the following feeding routine:—Morning: Water horses before feeding; allow the animals two hours for breakfast; properly groom them before harnessing. One hour's feed and a drink, if possible, at mid-day; leaving off work before sunset. During the day the feed should consist of chaff and bran, long hay being fed at night. Well-fitting collars were most essential, and the teamster should see that the hames were adjusted to the correct position on the collar. Any horse that showed signs of scalding should have its shoulders washed with a strong solution of salt and water immediately the collar was removed, and if it became necessary to work the horse a bran bag should be placed between the collar and the shoulder.

ASHBOURNE, December 4th.—On December 4th the Ashbourne Branch of the Agricultural Bureau held its annual social in the local schoolroom. There was a good attendance of members and visitors, and several subjects of local interest were brought forward for discussion.

LONGWOOD, November 4th.—The meeting was devoted to a discussion of the proceedings of the recent Conference of Hills Branches.

MEADOWS, November 8th.—Mr. J. W. Pitkin read a short paper, "Tools on the Farm," in which he enumerated the tools that would be required by the farmer in outfitting his repairing shop. The speaker said there were many jobs that could be done by the farmer, but he thought it undesirable to attempt repairs that required the services of a skilled tradesman.

MOUNT PLEASANT, November 10th.—Mr. P. B. Hauesler read a paper, "The Care of Cream," and an interesting discussion followed. Members were of the opinion that a greater percentage of profit resulted from separating cream of a thin consistency, because by that means the milk was skimmed more thoroughly than if a thick cream was made.

ROCKWOOD, November 8th.—The monthly meeting of the Branch was held at Mr. A. E. Henley's homestead. The Government Dairy Expert (Mr. P. H. Suter) attended the gathering and delivered an address "The Dairying Industry."

SOUTH-EAST DISTRICT.

GLENCOE (Average annual rainfall, 33.84in.).

November 8th.—Present: eight members and two visitors.

Silo and Stack Ensilage.—The monthly meeting of the Branch was held at Mr. F. Gratwick's residence. The following paper was contributed by Mr. D. S. Baird:—"For a dairying community we, in Glencoe, are sadly lacking in one of the main elements of dairying. I refer to the conservation of fodder and the making of ensilage. Most of us are content to milk the cows during the season when there is plenty of natural feed and later on to dry them off, so that in winter we milk only very few, and those few, not at their best. The district of Glencoe grows enough fodder at the present time to keep a herd all the year round, and, what is more, to provide a profitable return for the number milked. This can only be done by conserving the fodder during the plentiful months to be used during the lean time of the year, and a recognised factor in the successful conservation of fodder is a silo. Both the underground pit and the overhead silo can be recommended, but I prefer the silo built above ground. Ensilage may be made from either whole or chaffed green fodder, but I prefer the chaffed. A silo must be both air and water tight, because when air enters mould develops, and when water in quantity gains admittance the ensilage thus soaked rots like stable manure. The best class of silo is one circular in shape. Silos may be made of masonry, wood, or iron, or again of reinforced concrete, which I consider is best of all, because with care it is almost everlasting. Windows or openings are left in the sides for convenience and better handling of the ensilage and these, while the silo is filling, are closed and made airtight with clay. Fodder for ensilage must be in its green and succulent stage, and should be cut, carted, and either chaffed or stacked whole. This operation is continued until the silo is full, or all material exhausted, when weights are placed on top of the green stuff. When chaffing it is a good plan to have a number of boys inside the silo, for the more the ensilage is trampled the less air is retained. Keep the chaff scattered so that an even pressure may result, and with the centre full and the sides well trampled down, an even weight all round is produced. Some people believe in filling a silo straight off and weighting it

COX'S SEEDS

GIVE EVERY SATISFACTION,
Because we only sell TESTED and TRIED VARIETIES.
Weather is always a matter of great consideration, but it is desirable that a supply of Sowable SEEDS SHOULD BE ON HAND, READY for any favorable opportunity.

Agricultural Seeds,
Vegetable Seeds,
Garden Seeds.

"INTERNATIONAL" STOCK REMEDIES, including Stock Food, Gall Cure, Worm Powder for Horses, Colic Cure, &c., always on hand.

ENQUIRIES INVITED.

E. B. COX & Co.,
SEED MERCHANTS,
Corner Rundle St. & East Terrace.

DURING HARVEST

Send us your orders for fittings of every description, including

CROWN WHEELS
AND
CLUTCH PINIONS
for Harvesters and Strippers.

We specialise in all Castings for Harvesting Machinery.

J. & R. FORGAN,
Crystal Brook and Port Pirie.

down; others again advocate an interval of a day or so after every 15 tons to 20 tons has been put into the silo and then placing the weights in position. Green fodder is best, but if it should be on the dry side, water or salt may be added. When the silo is full cover over the ensilage with bags, straw, earth, posts, or anything that will keep the air out and add to the weight. This ensures that even the top layer is made practically airtight and will open up in a good condition. A recognised weight is from 56lbs. to 112lbs. to each square foot of top surface. As the ensilage matures it shrinks, and this amount of shrinking will vary with the depth of a silo and amount of weight on top. The ensilage when matured smells like a strong and yet sweet tobacco, and cows are very fond of it. Salt at the rate of 14lbs. to 10 tons of fodder makes it more palatable and more health giving to stock, while 14lbs. to 1 ton of fodder will effectively prevent the temperature rising, and thus obviate the use of heavy weights. I advocate the making of ensilage for the conserving of fodder and not the making of fodder, for what is unpalatable before it is made into ensilage is little better afterwards. The better the fodder the better the ensilage. If you do wish to use inferior matter, say, thistles, Cape weed, and grass, it is better to mix them as they are chaffed or stacked, and not to add a bunch of one and then a bunch of the other. By mixing them far better results are obtained, especially if some reliable fodder is added to the mixture. Fodders that would bloat in their green stage will nourish the stock when fed as ensilage. Maize, sorghum, wheat, oats, barley, peas, rye, and Sudan grass when chaffed or stacked in their green and succulent stages make splendid ensilage. Maize in its raw state, while a good fodder, only keeps the cows up to a standard already attained, but chaffed maize ensilage will both increase and enrich the milk returns, and assist in keeping the animal in good condition. A little bran added to maize ensilage well repays the outlay. To build a silo.—Government gives every encouragement and assistance, but, if you wish to build one yourself, two main factors should be first decided—(1) The size or capacity, which will be calculated on the number of cows to be fed during a specified time; (2) the material which will be used in the structure. A silo is not always full, and during its empty period it depreciates more than when in use. Iron will rust through, wood will rot, so that to make the first expense the final outlay it is advisable to build with either reinforced concrete or stone. Our South-Eastern limestone is, I consider, quite suitable for the purpose. To arrive at the size and holding capacity, it is well to remember that approximately 50 cub. ft. of cured ensilage weighs 1 ton. Say a man has 20 cows, and he considers he will feed for, say, 16 weeks; the ration of ensilage per cow is 60lbs. per day, and 112 days equal 3 tons per cow, and 20 cows equal 60 tons. Sixty tons at 50 cub. ft. per ton equal 3,000 cub. ft., and say the depth or height of proposed silo is 20ft., then it would be found that the floor surface will be 150 sq. ft., or about 12ft. 3in. square. Stack ensilage.—The same methods detailed above may be used for making stack ensilage. The result is equally as good ensilage, but decidedly more waste. Be sure you make a good bottom, using plenty of dunnage; this will prevent the wet affecting the ensilage from below, allowing it to settle down. Build as you would a stack of loose hay, keeping an even build, and finish off with a steep roof, which will keep the weather out and run off the rain. Cover over with straw, etc., and weight with bags of earth or other heavy weights. Use cross wires with logs tied on ends below. Constant attention must be paid for some little time as the stack sinks rapidly, and the weights will soon touch the ground and so become useless until tied up to a greater height. Salt in the case of stack ensilage may be used in the same manner as in the silo. Open as you would a hay stack; the end away from the weather, and cut out with a hay knife. I do not advocate ensilage in place of natural feed, but rather the conservation of superfluous feed as ensilage to be used in conjunction with natural feed when that becomes scarce. All stock will eat it and thrive, and give beneficial results. Rain will not spoil ensilage when it is being prepared, and the work can be carried on when other harvest work has ceased. I consider every owner of 25 cows or over should have at least one 100-ton silo, and owners of 10 to 15 cows at least a 50-ton silo, while I believe it would pay to have two silos whatever capacity might be wished. Thus the contents of the one silo could be properly cured while the other is being fed off or filled.

NEPTUNE

SPECIAL OIL ENGINE CYLINDER OIL.

Recommended by leading makers of Oil Engines as undoubtedly the Best Oil Engine Cylinder Lubricant.

REMEMBER—THE BEST OIL IS CHEAPER THAN NEW BEARINGS.

LOOK FOR THE BRAND.

ALL STORES OR

NEPTUNE OIL COMPANY, LTD.,
ST. VINCENT STREET, PORT ADELAIDE.

BAGOT, SHAKES, & LEWIS, LTD.,

Stock and Station Agents,

Wool and Produce Brokers, Shipping Agents, General Importers and Exporters, Land, Loan, Financial, and Insurance Agents.

We are now carrying large stocks of—

SUPERPHOSPHATES.

Woolpacks. Cornsacks. Bran Bags. Twines. Fencing Wires. Wire Netting. Galvanized Iron. Bore and Well Casing. Pipings. Cement. Field Gates. Troughing. Sheep Dips. Sheep Shears. Rabbit Poison. Machinery Oils.

Sole Agents in South Australia for—

"Acme" Sheep Dip.
"Knoblo" Blowfly Oil.
"Reliance" Petrol Engines.
"R.I.P." Rabbit Poisons.
"King Loc" High Tension Galvanized Steel Wire.

"CLAN LINE STEAMERS."

Head Office: 18, King William Street.

Motor Garage and Workshop: Light Square, Adelaide.

MOORAK.

November 2nd.—Present: 10 members and visitors..

Profitable Dairying.—In the course of an address on this subject, Mr. J. Davidson strongly advised those interested to make full preparation for the dry period of the year by planting various fodders, of which he had found lucerne, maize, chou moellier, and sorghum the best. He advocated that a small plot be set aside for experimental purposes in connection with the growing of fodders. South Australia was well behind the times in a dairying sense. In other States dairy instructors had been appointed, and their efforts had resulted in the improvement of the industry. Inspectors should be engaged to see that cleanliness was observed, because he had seen instances where, through sheer neglect, hundreds of pounds had been lost, especially in connection with the handling of cream. Settlers could not be too careful in selecting and keeping profitable cows. Feeding, too, was of the utmost importance. He strongly favored the heavy milker with an average test of 3.6 in preference to the low milker with high butterfat content. On a 12 months' return the big milker was undoubtedly the more profitable cow. He could safely say there were hundreds of cows in the South-East that should find their way to the butcher. In the dairying industry the selection of a bull from proved stock played a most important part in the raising of the standard of the herds. Shelter for stock was another very important matter for the farmer to consider, as warmth in the winter was often half the battle. Shelter was also a big asset to the holding, and represented time and labor spent in the right direction. The speaker also dealt with the methods of cooling and keeping milk in hot weather, which was an important matter, not only to the dairyman, but also to the factory, as a few gallons of tainted milk often spoiled hundreds of gallons at the factory. Asked the breeds he favored, Mr. Davidson said his choice was a cross of Jersey and Illawarra Shorthorn with the Holstein-Friesian in the second place.

PENOLA (Average annual rainfall, 26.78in.).

November 4th.—Present: 12 members and two visitors.

Shearing Operations.—The following paper was read by Mr. A. J. Ricketts:—"Before shearing operations are commenced the yards and shed should be thoroughly cleaned out, particular care being taken to remove all pieces of straw and chaff. The sheep should be cleaned up before they are shorn, and, if possible, classed before they go into the shed. A straight raddle mark on the nose for the breeding ewes and a cross on the nose for the culls is a very good way of marking when classing the sheep. I favor blade shearing in preference to machines. See that the shearer keeps well down on the back, going over the first side so as not to cut into the fleece. Care should be taken not to make large belly pieces. The late lambs should be shorn as early as possible in order to give them a chance to put on condition, for even if they do not cut enough wool to pay the shearer, they will make up for it the following year. Skirt the fleece as lightly as possible, but remove all short and sweaty pieces along the edge of the fleece, also any coarse wool on the breech. On the plain country burr seems to be one of the greatest troubles, and if one skirts to remove all the burr, very little fleece wool remains. When rolling a fleece, first turn in the breech end about 18in., and treat the neck in the same manner. Then turn in the side nearest the operator, then the opposite side, and roll the fleece from the breech end to the neck. The wool table should not be less than 9ft. long and 4ft. wide. Make classes as follows:—A.A. Merino, consisting of fleeces of good length, light and bright; A. Merino, consisting of fleeces shorter and heavier in condition; B.B. Merino, consisting of strong and plain wool. Make two classes of the pieces A.A., consisting of pieces bright and fair length pieces, and A., consisting of pieces coarse, short, and fatty. I am convinced that it does not pay the man with a small clip to skirt bellies, but it is necessary to remove all stains from wether bellies. Avoid mixed bales, because the buyers only bid for the lower grade wool unless a piece of bag or paper is placed between the different grades of wool. If this is done the brokers should be advised accordingly.

AGRICULTURAL PUBLICATIONS.

following bulletins and leaflets may be obtained by residents of South Australia by sending a 1½d. stamp for postage of each copy required; other places, 3d. each :—

ommunications must be addressed—Editor, "Journal of Agriculture," Victoria Square, Adelaide.

Journal of the Department of Agriculture, 1s. per annum in advance; 3d. per single copy to residents in South Australia. Other places, 2s. 6d. per annum; single copies, 6d. each

Subject.	Bulletin No.
EW, H. W., Botanical Assistant—	
eds Imported from Abroad into S.A.	109
MONT, CHAS. H.—	
chards and Orchard Work	143
L, L. B., D.V.Sc.—	
rage Poisoning	167
EBATCH, W. J., B.Sc. (Agric.), M.R.C.V.S.—	
arrenness in Livestock	XLVIII.
onversion of Fodder Crops into Silage	LXVII.
ietetic Value of Cereals and their Products	155
ield Pease, Production and Utilisation of	140
igs, General Management and Breeding of	141
oseworthy Agricultural College—Harvest Report—	
1914-15	90
1916-17	114
1918-19	123
1919-20	136
DGE, C. P., Instructor for Mallee Lands—	
ints for Settlers Starting in Mallee Lands	—
TON, C. A., B.V.Sc., Government Veterinary Surgeon—	
Hints on the Diagnosis of Disease in Farm Animals	133
ELL, J., Field Engineer—	
Reinforced Concrete Silos	146
EKINS, Prof. ARTHUR J., Director of Agriculture—	
Agricultural Education in South Australia	154
Ayers and Hanson, Possible Improvements in Farming Practices of Hundreds of	95
Black Japanese Millet on Reclaimed Murray Swamps	XLII.
Dairy Cattle, Suggested Rations for	XXI.
Ensilage, Use and Making	146
Farm Horses, Suggested Rations for	XXII.
Farm Livestock, How to Lay Foundations of Good Strains	XXXI.
Forage Crops in the South-East	92
Livestock, Duties of Farmers as Rearers of for the State	116
Manures in their Relation to Present Day S.A. Farming	148
Manuring of South-Eastern Pasture Lands	122
National Aspects of Guaranteed Minimum Price for Wheat	121
Olive Groves, Scope for Extension in S.A.	111
Phosphatic Manures	87
Pigs, Feeding Tests with	163
Pigs, A Neglected Source of National Wealth	164
Possibilities of Increased Production in our Rural Industries	126
Rise and Progress of the Fruitgrowing Areas of the Murray	168
Roseworthy Agricultural College—	
Harvest Report, 1910	63
Harvest Report, 1912-13	78
Harvest Report, 1913-14	83
Fourth Report, Permanent Experimental Field, 1909-10	65
Fifth Report, Permanent Experimental Field, 1905-14	89
Rotation of Crops, 1916	100
Rotation of Crops, 1919	125
Training and Research	115

Subject.	Bullet No.
PLACE, F. E., B.V.Sc., M.R.C.V.S., M.R.A.S.E.—	
Bloodworms	LXV.
Bot Flies and Bots	LXVI.
Cow, Some Common Troubles of the	139
Diet Deficiency and Disease in Livestock	77
General Management of Draught Horses on the Average Farm, Notes on	132
Horse, The, General Management, etc.	138
Medicine Shelf, The	85
Milk Fever or Drop after Calving	XXXIII.
Some Sheep Worms	LIV.
QUINN, GEO., Horticultural Instructor, &c.—	
Apple Packing	98
Codlin Moth, The	XIV.
Fruit Drying for Beginners	81
Fruit Trees and Vines, Remedies for Diseases of	70
Olive Growing, Notes on	145
Orange in South Australia	107
Select List of Fruit Trees, &c.	91
Table Grapes	LIII.
SPAFFORD, W. J., Superintendent Experimental Work—	
Ensilage, its Manufacture and Use	128
Experimental Farm Harvest Reports—	
1916-17	119
1917-18	124
1918-19	129
1919-20	153
1920-21	157
Fertilizers for the Home Garden	160
Fodder Crops on Reclaimed Swamp Lands	127
Pig Raising where Lucerne can be Successfully Grown in S.A.	149
Soils	162
Wheat Crops—Some Diseases of, and their Treatment	110
Wheats, Cross Fertilization of	XLIII.
GENERAL AND REPRINTS—	
Beekeeping Notes—Foul Brood: Its Symptoms and Treatment	XIII.
Berri Experimental Orchard, Second Report	147
Dry Farming Conference, 1911, Report	I.
Fruit Flies	24
Fruit Nomenclature	XLIX.
Congress, Agricultural Bureau, 1911	66
Congress, Agricultural Bureau, 1914	86
Herd Testing Societies, Regulations	137
Hints to New Settlers on Irrigation Areas	99
Milking of Cows	VI.
Ostrich, The	XXX.
Plums and Prunes	XV.
Sheep Tick and Sheep Louse	84
Spaying of Cows	IV
Tobacco, Growing and Curing	159
CONFERENCE REPORTS—	
Eyre's Peninsula District, 1920	158
Hills District, 1920	152
Lower Northern District, 1920	142
Lower Northern District, 1921	156
Mid-Northern District, 1920	134
Mid-Northern District, 1921	161
Murray Lands District, 1920	151
River Murray District, 1920	144
River Murray District	165
South-Eastern District, 1920	135

THE AGRICULTURAL BUREAU.—Particulars of this Organization, of which every farmer should be a member, can be had on application to the Department.

Do not mix rams' wool with ordinary fleeces when pressing wool. Place the bright side—the shoulder wool—in such a position that it will appear to the buyer at first sight. The weight of the bales should run from 315lbs. to 335lbs. for fleece, and heavier for pieces and bellies. When branding bales use stencils. The numbers should be 4in. long and letters 3in. Always brand on the front of the bales, setting out grower's initials, name of farm, description of wool, and number. On top of the bale mark the name of the farm and number. If a wool press is used, I recommend grip bale fasteners instead of sewing twine.''

RENDELSHAM.

November 6th.—Present: 16 members.

POTATO CULTURE.—In the course of a paper dealing with this subject, Mr. S. S. Smith said that success did not depend on the acreage a farmer put under crop, but rather on the care, selection, and sowing of the potato seed. Some farmers stated that they had grown heavy crops from seed potatoes the size of marbles. That might possibly happen in one season, but it could not be said to be a sound practice to follow year after year. The farmer should grow a stud plot of potatoes every year. To do that it would be necessary to rely on the diggers to a certain extent to put aside every extra good root of potatoes. Those should be planted for seed, and by so doing the quality of the potatoes would be considerably improved. The seed in the stud plot should be set out in furrows 9in. apart, with 1ft. between each set. Such a plan would, of course, entail a little extra work, but the farmer would be well repaid for the extra labor, because he would create a keen demand for good seed potatoes from the neighboring farmers. During the past season he had experimented with the growing of potatoes on fallowed land, on land that had received an application of lime, and also on a plot of ground into which a crop of rye had been turned. The seed planted on fallowed land had returned the heaviest yield, and the potatoes did not seem to be affected by the frost to such a degree as those sown on the other two plots. He strongly adocated fallowing, except where one was sowing on a piece of land that had previously received a fair amount of cultivation. In the discussion that followed, Mr. R. Foster said no hard-and-fast rule could be applied to selecting potato seeds. He had seen good crops grown from poor seed, and poor crops from good seed. He believed that what was needed most was a better system of marketing. Mr. H. Stewart stated that in Mount Gambier in the early days the potatoes were planted in rows running north and south, so that the sun could shine down the rows. It was believed that that was beneficial to the potatoes.

KALANGADOO, November 11th.—The subject ''Superphosphate and Its Effect on Different Types of Soils'' was brought before the meeting, and an interesting discussion ensued. Other subjects of local interest were also introduced for discussion.

LUCINDALE, October 21st.—Mr. E. S. Alcock (Field Officer for the South-East), attended the meeting and delivered an address, ''Potato Growing.'' Members then discussed the merits of subterranean clover as a fodder crop.

NARACOORTE, October 14th.—The Field Officer for the South-East (Mr. E. S. Alcock) attended the meeting, and delivered an address, ''Fodder Grasses in the South-East.'' The report of the delegates to the Congress (Messrs. J. Corner and C. Jenner) was also received and discussed.

TATIARA, November 22nd.—On November 22nd the second crop inspection of the district was carried out under the auspices of the local Branch of the Agricultural Bureau, and the following properties were inspected:—Messrs. D. R. Milne, J. Hunt, J. Elliott, M. McGrice, H. and B. Wiese, S. Watson, T. Hill, E. J. Buckley, M. Sullivan, D. Butler, C. Marshall, Milne & Sons, McGlasson, Penny and Cleggett.

POINTS FOR PRODUCERS.

Herd Testing Results.

The second year's operations of the River Murray Herd Testing Association forms the subject matter of a bulletin issued by the Department of Agriculture. After giving the combined results for 1921-22, and comparing the results of the 1921-22 and the 1920-21 seasons, the report deals with the herds of individual members of the Society. An outstanding feature is the progress that has been made by the herd of Mr. C. J. Morris. This particular herd in 1921-22 gained second prize, whereas in the previous year it occupied seventh place. Mr. Morris' herd made more progress during the year under review than any other of the competing herds. It consists of grade Friesians. The improvement effected in 1921-22 was very striking. The mean output of milk per annum was increased by close on 183galls. or 25.54 per cent., and the mean output of butter fat of 67.38lbs. or 22.86 per cent. At current prices these increases represent improvement in gross returns per cow per annum as whole milk of £6 17s. 1d., and as butter fat and skim milk of £5 15s. 9d. The two factors which contributed chiefly to the very satisfactory results were the weeding out of unprofitable cows and the better management and feeding of the balance of the herd. The herd was reduced by about 17 head, representing 37.9 per cent. of the original mean total. Among the cows discarded was one of the best of the 1920-21 performers, the only one in fact which in that season yielded over 400lbs. of butter fat and over 1,000galls. of milk. In 1921-22 seven of Mr. Morris' cows yielded over 1,000galls. of milk and 400lbs. of butter fat each; in addition four others yielded over 400lbs. of butter fat.

Seed Oats and Wheat at Roseworthy.

This season there has been an unprecedented demand for seed of a number of new varieties of oats introduced into this State by Roseworthy Agricultural College. This applies particularly to Lachlan, Early Burt, Quondong, Scotch Grey, and Kherson. As early as November last the stock of College-grown seed was exhausted, and many orders have already been received for seed from the 1924 harvest. To meet likely demands, a larger area will be devoted to seed oats next season. Intending growers who were unable to secure seed from the College this year have been supplied with the names of men who purchased seed last year in the hope that from these men they would be able to procure their requirements. College-grown seed wheat is also meeting with a heavy demand and this season's supply has been exhausted, with the exception of King's Red and King's White varieties, parcels of which are still available.

Permanent Pastures in the South-East.

The drainage operations in progress in the South-East have resulted in the partial reclamation of quite a number of swamps in that part. Consequently, the land is now under water for much shorter periods than was formerly the case; hence landholders have the opportunity of growing summer fodders for their livestock. Mr. W. A. Paltridge, of Minecrow, can be mentioned as one who is making an effort to increase the carrying capacity of his country in this manner. Rape and rye grass were tried by him with some measure of success, but his object is to make a permanent pasture, and to assist in this the Department of Agriculture some time ago provided him with roots of the following grasses:—Woolly top, buffalo, kikuyu, elephant, and many-flowered millet. Of these, woolly top and buffalo are doing extremely well and are providing a good mat of feed on the area planted. These are both perennial grasses which will stand hard feeding, and are of relatively high fodder value. Of the others kikuyu and elephant grass are very promising, but at the present time are not so forward as the two before mentioned. On the recommendation of the Department of Agriculture, Mr. Paltridge also tried Wimmera rye grass, subterranean clover, and King Island melilot. All of these are proving valuable. The subterranean clover in particular is making extremely good growth on the yacca country. The outstanding feature of the development of planted grass in this district is the promise shown by buffalo. This is familiar to most persons as a lawn grass and few are inclined to look on it as a useful fodder. In the South-East, however, it is making such growth as to suggest that ultimately it will greatly increase the carrying capacity of many areas which, in their natural conditions, are relatively poor stock country. In quite a number of places this grass is growing, apparently having escaped from gardens. In spite of the presence of large numbers of rabbits, which eat it down very greedily, the patches of the grass are extending.

Smyrna Figs on the River Murray.

At the present time only a few tons of dried figs are produced annually in Australia. These consist principally of the White Adriatic type. At the Government Experimental Orchard, Berri, there is an area of approximately five acres devoted to Smyrna figs, and the fine reception which the dried product has met with at the hands of the public suggests that for some time to come there will be a considerable opening for planting this fruit. Although this variety of fig can be grown to a fairly high state of perfection in many of the more humid parts of the State, it appears that it can be grown to greatest advantage in the very dry atmospheric conditions which prevail in the Murray Valley. At the suggestion of the Horticultural Branch of the Department of Agriculture, the committee responsible for planting irrigated fruit blocks on the River Murray for returned soldiers has decided to set out on each block an area of at least one acre of the Smyrna and the necessary varieties of Capri figs to ensure fertilisation. The Irrigation Department at Lake Bonney last year planted upwards of 10,000 cuttings, and from these a large number of rootlings should be available for planting during the coming winter. Other States of the Commonwealth are interesting themselves in this variety of fig, for the Horticultural Branch of the Department of Agriculture has received a request for several thousands of cuttings from a neighboring State. In view of the prospects of this fig on the River Murray, however, it is proposed to reserve all cuttings available at the Blackwood and Berri Orchards for planting on the River Murray irrigation settlements.

Downy Mildew in Vines.

Unfortunately the prediction of the Horticultural Branch of the Department of Agriculture that an outbreak of downy mildew in vines was likely to be experienced if humid conditions followed the summer rains has proved to be only too well founded. During the third week in January specimens of vine leaves collected by the Inspector of Phylloxera from a vineyard in the Marion district revealed the presence of the fungus which causes the disease. A subsequent inspection of the vineyard showed that a relatively severe attack was pending in the vines from which the infected leaves were procured. The fungus was also found on leaves scattered almost throughout the whole of the vineyard. The variety of grape infected was Pedro Ximines, the fruits of which are yet in the hard green stage. Unfortunately, most of the vignerons in this locality failed to spray their vines during the summer, and should the weather continue favorable to the spread of the fungus there is a possibility of it doing considerable harm, particularly because of the contiguity of the vineyards in the area referred to. As has been frequently pointed out by the Horticultural Branch of the Department of Agriculture, spraying with copper compounds, such as Bordeaux or Burgundy mixtures, is preventive, but not curative. Consequently, those vines which were attacked before the application of the spray may lose the greater number of their leaves. In those cases in which the vines are showing no evidence of the presence of the fungus it may be possible to ward off injury by giving the clean foliage a good dressing of copper spray at once.

Up till the present, reports from other vine-growing districts of the State fail to mention any outbreak of downy mildew. Experience in the adjoining States, however, indicates that the fungus may be wind borne, and that over long distances. Consequently, the possibilities of infection from one district to another, particularly where only a few miles separate them, are very considerable. Therefore, where spraying has not been adopted by growers, it would be well for them seriously to consider whether this should not be entered upon at once, the expense being looked upon as an insurance premium.

Livestock Foodstuffs.

A revised and enlarged edition of the Bulletin "The Equivalence of Livestock Foodstuffs" by the Director of Agriculture (Professor Arthur J. Perkins), has been issued by the Department of Agriculture.

STERLING FARM TRUCK

The Sterling Farm Truck is the most convenient vehicle ever designed for use on the farm. It is particularly useful because of the many purposes for which it can be used. It is suitable for all kinds of farm work and can be used for carting timber, &c.

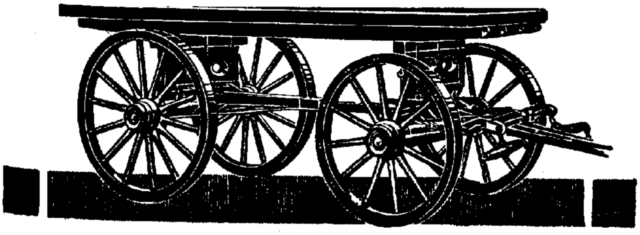
The under carriage is well made and heavily ironed, and the truck may, when used for such work as timber carting, be shortened or lengthened to any distance within the range of the extension bar.

The wheels are strongly constructed of carefully selected and well seasoned material, and track 5 feet wide. The front wheels are 40 inches and the rear wheels 44 inches in diameter, fitted with 4-inch tyres.

The truck is made in two sizes, with carrying capacities of 4,500lbs. and 6,000lbs. respectively, and is regularly equipped with table top, brake, pole, neck yoke, and trees, but single or double shafts will be furnished when required, at slight extra cost.

See the I.H.C. local agent for full information, or write us direct for same.

International Harvester Company of Australia, Pty., Ltd.,
113, 114, North Terrace, Adelaide.
Agents Everywhere.



In this publication the writer deals generally with the feeding of the principal livestock in this State, with special reference to the composition of foodstuffs and their combination in suitable rations. The "starch equivalent" method is explained and used as a basis for tables showing the comparative food value prices of various foodstuffs relatively to wheaten hay chaff, and wheat at usual current rates. The bulletin also includes a statement of a number of typical rations for different types of livestock.

Manurial Tests in the Karoonda District.

At the request of the Nunkeri and Yurgo Branch of the Agricultural Bureau a series of experimental plots was laid down last year by the Department of Agriculture on the holding of Mr. H. Sanders, of Yurgo Siding. Included in the series was a set of plots designed to test the effect of applications to the wheat crop of lime and superphosphate in varying quantities. The plots were sown with Marshall's No. 3 wheat at the rate of 60lbs. of seed to the acre. The first year's harvest has now been taken off with the following results: —The plot which received no manure yielded 9bush. 9lbs. per acre, whereas that which received 1cwt. of superphosphate per acre returned 26bush. 24lbs. Four plots were dressed with lime at the rate of 5cwt. per acre, and superphosphate in varying quantities. The return from these plots was as follows:—

½cwt. of super and 5cwt. lime	..	20bush. 10lbs.
1cwt. of super and 5cwt. lime	..	25bush. 19lbs.
2cwt. of super and 5cwt. lime	..	24bush. 7lbs.
3cwt. of super and 5cwt. lime	..	24bush. 20lbs.

Murray Bridge High School.

The attention of farmers who have sons eligible to enter a High School is drawn to the special course of work provided at the Murray Bridge High School. In addition to a general education, such as is given by most country High Schools, scholars have the opportunity of doing special work of an agricultural nature. The aim is to give an agricultural bias to those lads who intend becoming primary producers. With this end in view the following studies are included in an elementary form:—(1) Chemistry and Botany, especially as related to agriculture; (2) Agriculture Study in simple form of soil, tillage, water, and irrigation; (3) Horticulture—planting, training of young trees, pruning, budding, grafting, spraying, storing, and preserving of fruit; (4) Natural Science—value of our native birds, insect life (various stages), remedies for destructive insects, fungus diseases and spraying; (5) Milk Testing; (6) Practical work in school garden and irrigation plot.

Herd Testing in the Metropolitan Area.

The first definite move towards the formation of a herd testing association in the metropolitan area was made on Tuesday, January 30th, when a meeting was held at the offices of the Department of Agriculture, Adelaide. The Director of Agriculture (Professor

Arthur J. Perkins) presided over an attendance which included Messrs. H. H. Shillabeer (Kilkenny), F. H. Butterfield (Fulham), F. G. Jones (Springbank), A. Snell (Bolivar), H. F. Lake (Clarence Park), J. Malthouse (Gilles Plains). The Director of Agriculture detailed the conditions under which the Government was prepared to subsidise and assist associations, and outlined the advantages that accrued from herd testing. The results of the two societies already working under the provisions of the Government scheme for the formation of associations were discussed, and reference made to the extensive activities of similar bodies in other parts of the world. Professor Perkins made it clear that every cow in the herd of members must be included in the test. It was pointed out that the object was not to discover individual cows of particularly high producing capacity, but rather to give the owner definite information on the producing capabilities of each animal in his herd; thus it was hoped to raise the average production of the herd by encouraging the owner to discard the obviously unprofitable ones, and restrict his breeding operations to cows of high-producing capacity. A general discussion followed the Director's remarks, and those present expressed their willingness to support the proposed association by themselves submitting their herds to test, and, further, by using their endeavors to influence neighboring dairymen to do likewise. It was decided to hold another meeting further to discuss the proposal at the end of February.

Regulations Governing the Importation of Vines and Fruits.

Under the provisions of the Vine, Fruit, and Vegetable Protection Act of 1885, which is administered by the Horticultural Branch of the Department of Agriculture, the introduction into this State of any vine or portion of a vine, including the fruit, is strictly prohibited. The reason for this prohibition is the existence in adjoining States of diseases and pests which have so far been kept out of South Australia. The chief of these is the phylloxera insect, which has caused tremendous loss in other countries, including Victoria, where the insect has existed for over 50 years. Despite the proximity of the insect, South Australia has up till the present remained free of it. Other fruits may be brought into the State, but only after inspection at specified points of entry. The unlawful introduction of vines or fruits carries with it a liability to a fine of up to £100 and imprisonment for a term of up to six months.

Wool Instruction for Farmers.

In consequence of the appointment of an assistant to the Wool Instructor of the School of Mines, the services of that officer are now available for instructional purposes in the country districts to a greater extent than hitherto has been the case. Accordingly, arrangements have been made for the Wool Instructor (Mr. A. H. Codrington) to visit Farrell's Flat, Milang, and Mount Barker during February for the purpose of giving lectures and demonstrations before the local Branches of the Bureau. During the month of March it is proposed that the Wool Instructor should visit a number of Branches of the Agricultural Bureau on Eyre Peninsula.

Vine Varieties.

In the early days of the settlement of this State, many landholders within reasonable distance of the city of Adelaide established small vineyards of a few acres in extent, and made wine from the crops. This was the genesis of the wine industry of South Australia. Amongst the pioneers were a few men possessed of sufficient knowledge, enthusiasm, and public spirit to enable them to collect from the Mediterranean regions varieties of vines which were planted in vineyards under their control, and subsequently, in some instances, distributed to different parts of the State. Amongst these men might be mentioned the late George Stevenson, Sir Samuel Davenport, Dr. Kelly, Thomas Hardy, Sir John Morphett, and Dr. Schomburgk. With the progress of settlement many of these early plantations have been destroyed, but in some of them which remain without much extension beyond the original areas, investigations have proved that there are varieties of vines which for some reason have not established themselves in popular favor. The future may reveal that amongst these scattered and long forgotten kinds are some capable of taking a place in the front rank of our wine producing varieties. It is with the object of securing definite information on the possibilities of these that the Horticultural Branch of the Department of Agriculture is acting in collaboration with the Vine Growers' Association, and gathering specimens of these sorts into the State collection at Hackney Road Experimental Orchard, where there are already some 70 varieties growing under various methods of pruning and training. The recent visit of Mr. F. de Castella, the Government Viticulturist of Victoria, to this State, was undertaken at the request and expense of the Vine Growers' Association for the purpose of assisting in clearing up obscurities in the nomenclature of these vines.

Mr. Orchardist, has it occurred to you

that **IDLE ACRES PAY NO RENT,** and that those blank spaces in your orchard would become profitable and greatly increase the value of your property if planted with good fruit trees. Fill them this season with **QUALITY FRUIT TREES** from the Balhannah Nurseries.

Send for the **PLANTERS GUIDE,** Post Free to any address.

Inquiries solicited on any matters pertaining to fruit trees.

BALHANNAH DECIDUOUS NURSERIES,
BALHANNAH, SOUTH AUSTRALIA.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by C. A. LOXTON, B.V.Sc., Government Veterinary Surgeon.]

"S. P.," Koolunga, asks treatment for footrot in sheep.

Reply—The disease can be cured by keeping affected sheep on dry country, the removal of all diseased horn, and treatment with astringent and antiseptic dressings. For this purpose copper sulphate is both cheap and effective, though dressings of arsenic, lime, carbolic, &c., are sometimes used. Affected sheep should be isolated in a dry paddock, and should not be allowed on sound country until cured. Paring the feet is a most important factor in treating the disease. All superfluous loose and diseased horn should be removed, avoiding injury to the sensitive structures. Use a sharp knife and a pair of secateurs for this purpose. Sweep up and burn all the hoof parings. If the part is blown, the maggots can be destroyed by an application of sheep dip. The most effective application is bluestone, and where a number of sheep require treatment they can be walked through a shallow trough about 20ft. to 30ft. long, with cleats in the bottom to prevent slipping. Fill this with a solution made by dissolving ½lb. of bluestone per gallon of water. They should be put through this foot bath three times a week until cured. If it is not convenient to use the trough they must be hand dressed every two or three days with the same solution.

Hon. Secretary, Agricultural Bureau, Black Springs, asks cause of lice affecting good-conditioned horses.

Reply—Infestation by lice is always due to direct or indirect contact with similarly affected animals. Those in low condition are particularly susceptible, but lousiness may occur irrespective of condition.

"E. J.," Darke's Peak, has cow, first lame in fore legs, later in hind legs. Otherwise animal quite healthy.

Reply—I advise you to give her powdered nux vomica, one level teaspoonful, once daily, mixed with a little treacle, and given on the tongue. Give her this for a week or ten days. Feed her liberally, and give her 1oz. of salt and bonemeal daily in her feed.

"V. A.," Meadows South, has cow which broke into paddock of amber cane about 6in. high. After feeding for about half an hour the cow staggered and died one and a half hours afterwards. Post mortem showed the stomach to be considerably inflamed.

Reply—Sorghum may cause poisoning under certain conditions from the formation of prussic acid during the process of digestion. Young sorghum is particularly dangerous in this respect. I think that the rapid death of your cow after feeding on amber cane was due to poisoning by this plant, and the symptoms are in agreement with this opinion.

Hon. Secretary, Shoal Bay Agricultural Bureau, reports sheep which are breaking out in sores on the lips and mouth.

Reply—The disease is known as contagious stomatitis, and it not only affects the mouth and lips, but frequently the feet also. Affected sheep should be isolated and not returned to the flock for a fortnight after recovery. Remove the crusts by rubbing them off with a flat piece of wood, like a garden label. Dress the lips with a solution of permanganate of potash (Condy's crystals), about as much as will go on a sixpenny piece dissolved in a pint of water. Then dress three times a week with the following ointment:—Carbolic acid, 1 part; sulphur, 2 parts; vaseline, 20 parts. The interior of the mouth may be treated with boracic acid solution, one tablespoonful to a pint of water.

"T. Bros.," Farrell's Flat, reports horse gorged with wheat and very stiff in both fore and hind quarters.

Reply—The horse is now suffering from laminitis (founder), which is the usual sequel to wheat engorgement. You should put him on light laxative diet, mashes, &c., and give for a few days some saline medicine such as Epsom salts, 1oz., twice daily, with a teaspoonsful of saltpetre. This may be given in the food or drinking water. With regard to the founder, the best treatment is the foot bath. He should stand in cold water up to his fetlocks several hours a day. If you are unable to improvise a foot bath put bags round the feet and keep them wet with cold water. If shod, remove the shoes. If treatment can be adopted within a short time after the wheat has been eaten you should give 4ozs. of bicarbonate of soda in a pint of lukewarm water, and repeat in two or three hours. Follow this later with a dose of raw linseed oil. If this treatment can be carried out early it will prevent the development of serious symptoms.

Hon. Secretary, Agricultural Bureau, Shoal Bay, reports aged bay mare with a swelling, which has been present for some years, on the back of the hamstring.

Reply—I do not think that there is any risk in working her so long as she shown no lameness. The swelling is probably the result of an old injury, and could be removed with the knife, but if it is not causing any trouble I would advise you to leave it alone. If there is any raw or abraded surface, dust it frequently with some dry wound powder, such as zinc oxide, or a powder composed of equal parts of boracic acid, starch, and zinc oxide.

"T. S.," Orroroo, has five cows with swollen and hot udders, and animals off feed.

Reply—The cows are affected with a form of mammitis, or inflammation of the udder. Where the udder is hot and swollen it should be fomented frequently with hot water. After fomenting, give the affected quarters plenty of gentle hand rubbing, and strip them out as often as possible. In the early stages apply belladonna ointment after fomenting and drying the udder. It is advisable to keep cases of mammitis away from the other milking cows. Cows suffering from this trouble should be milked last, preferably by one milker. Milk into an old pail containing some disinfectant, and do not strip the milkpan affected teats out on to the floor. After the acute symptoms have subsided, apply a little iodine ointment daily.

"G. M.," Millicent, has (1) young pig which has lost the use of his hind quarters.

Reply—This symptom is common to several ailments, but as it appeared suddenly it is probable that it is due to an injury. Put him in a pen by himself. If he shows no improvement in a reasonable time you need not persevere with treatment.

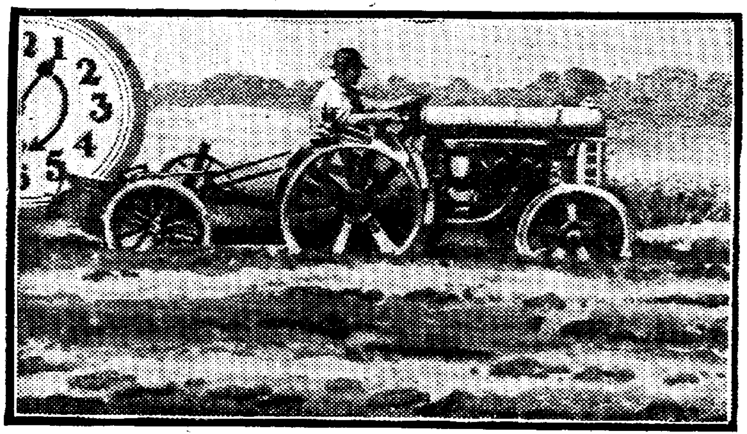
(2) Fat pony mare with chronic cough.

Reply—It would be advisable to reduce her condition. Diet her carefully, avoiding bulky foods. Water before feeding, and do not use her until an hour or so after feeding. Give one teaspoonful of iodide of potash daily. Dissolve this in a little warm water, and give with a few handfuls of bran.

Hon. Secretary, Agricultural Bureau, Narridy, reports death of horses after grasshoppers had been over the country last year, and suggests that their droppings were poisonous to stock.

Reply—I am not aware of any mortality from this cause in horses or other stock, and should be glad if you will furnish further particulars, symptoms, &c.

Work the Clock Round with a FORDSON TRACTOR!



It will pay to investigate the

FORDSON

FARM

TRACTOR

TIME SAVED MEANS PROFITS EARNED.

The striking advantages of the FORDSON is that ploughing and most of the preliminary operations of wheat cultivation, if necessary, can be carried on the whole 24 hours of the day. Besides operating ploughs, harrows, harvester, and seed drills, it can be profitably used for such work as threshing, chaff cutting, water pumps, wood sawing, also for hauling, but, of course, on this score, cannot compete with the FORD ONE TON TRUCK for general haulage work, such as conveying produce to the market.

S.A. Distributors, **DUNCAN MOTORS LIMITED,** FRANKLIN STREET, ADELAIDE.

Hon. Secretary, Black Springs Agricultural Bureau, reports four-year-old colt with boils on the shoulders, although it has not been worked since fallowing.

Reply—The ailment is known as acne, and is due to inflammation of the sweat glands from infection by pus germs. Dress with bluestone solution, using one heaped teaspoonful to a quart of water.

“E. J. S.,” Wirrabara, asks remedy for warts on cow’s teats.

Reply—The application of castor oil to the teats after each milking sometimes give good results. Large pednuculated warts may be removed with a sharp pair of scissors. A very satisfactory application is made as follows:—Salicylic acid, 1 dram, dissolved in 7 drams of collodion. This should be applied daily. A careful application of lunar caustic or strong acetic acid is also effective.

“A. E. H.,” Wiltoo Private Bag, has draught mare with one side of the udder swollen. Swelling extends along the stomach almost to the front legs.

Reply—You should put her on light laxative diet, and give her saline medicine, such as Epsom salts 1oz., saltpetre 1 teaspoonful, twice a day for a few days, in her feed or drinking water. The swelling may be due to an injury, and may indicate pus formation in the region of the udder. In this case you will have further development of the part becoming warm and painful. If this takes place, apply warm foments, and after the abscess bursts or is evacuated, apply disinfectant lotions. In some cases swellings of this kind appear as a symptom of debility and other constitutional disorders. Put her in a small yard where she can take a little exercise, and do not keep her shut up in the stable.

“L. A. von D.,” Halidon, has light horse, three years old, in poor condition.

Reply—You should bring him in and feed him. Give also one tablespoonful of Fowler’s solution of arsenic daily in the feed for a fortnight.

“M. J. D.,” Wirrabara, has two cows, apparently in good health, yet while being milked, blood and matter come from the teats.

Reply—They are suffering from a form of mammitis, and I advise you to commence treatment by giving a dose of purgative medicine:—Epsom salts, 1lb.; treacle, 1lb., in a quart of warm water. Do not give them green lucerne or anything calculated to stimulate milk production. If there is any heat in the udder you should apply warm foments, drying the udder afterwards with a soft cloth. Milk out the affected teats frequently and carefully. Give the udder plenty of gentle hand rubbing, and apply camphorated oil.

Hon. Secretary, Nunkeri and Yougo Agricultural Bureau, Karoonda, reports nine-year-old pony stallion off feed, stiff in near foreleg and both hindquarters, ears and nose cold, drinks more than usual.

Reply—I recommend you to give a pint of raw linseed oil with two tablespoonfuls of turpentine. Follow this with tincture of nux vomica, one teaspoonful in a little water twice a day. Try and get the horse to take a little mash daily, and give enemas of warm soapy water.

Hon. Secretary, Agricultural Bureau, Hookina, asks cure for horses with sore backs.

Reply—Sore backs are due to the friction or pressure of an ill-fitting saddle, and are therefore preventable. Apply the following lotion two or three times daily:—Sulphate of zinc, 4oz.; acetate of lead, 4ozs. (mix); water, 1 pint. Use one part of this to four of cold water. Shake the bottle before pouring out. If necessary, put the horses out of work.

“M. D.,” Torrensville, asks reason for milk of cow being discolored with blood.

Reply—This may be due to an injury inflicted on the udder by a blow, or it may be due to congestion or inflammation of the udder. If any heat or pain is present, apply warm foments, followed by the application of camphorated oil. The presence of blood in the milk due to an injury should gradually clear up with careful milking.

“F. G.,” Halidon, has light mare with “pimples” on the belly, short ribs, and rump, which have been present for about six months.

Reply—I advise you to give her a course of Fowler’s solution. Obtain 1lb. of this preparation, and give her one tablespoonful in her feed night and morning. Dress the “pimples” with iodide of sulphur ointment.

DEPARTMENTAL DOINGS.

AGRICULTURE.

During the month of January the Director of Agriculture (Prof. Arthur J. Perkins), in company with the Minister of Agriculture (Hon. G. F. Jenkins, M.P.) visited the Parafield Poultry Station, the Kybybolite Experimental Farm, and various places in the Millicent district. The Director made a trip to Lyndoch, where he inspected a plant for the evaporation of fruit, installed by a local co-operative company. He also attended the Field Trial of Agricultural Machinery held at Paskeville under the auspices of the Northern Yorke Peninsula Agricultural Bureau, Field Trial, and Show Society.

HORTICULTURE.

The Horticultural Instructor (Mr. Geo. Quinn), in company with Mr. F. de Castella (Viticultural Expert of the Victorian Department of Agriculture), inspected vineyards in the Marion, Happy Valley, Reynella, Clarendon, Hectorville, and Magill districts in connection with the nomenclature of the different varieties of vines growing in the State. Mr. Quinn also inspected a fruit evaporator at Lyndoch erected by a co-operative society in that town.

DAIRYING.

The Dairy Expert (Mr. P. H. Suter) visited factories and dairymen in the following centres:—Strathalbyn, Kapunda, Nuriootpa, and Eudunda, while advice has been given to factory managers and producers in the Mount Gambier, Gawler, and Woodside districts by the Assistant Dairy Expert (Mr. H. J. Apps).

POULTRY.

The Government Poultry Expert (Mr. D. F. Laurie) has been on sick leave during the greater portion of the month, and poultry-keepers in the Woodside, Inglewood, Monteith, Piccadilly, and Seaton Park districts have been visited and advised regarding feeding methods and the lay-out of runs by Mr. C. F. Anderson (Poultry Inspector).

GENERAL.

The Secretary Advisory Board of Agriculture (Mr. H. J. Finnis) attended the Field Trial of Agricultural Machinery at Paskeville, and inspected a fruit evaporating plant recently erected at Lyndoch.

THE IRRIGATION BLOCKER'S HORSE.

At the request of the Block E Branch of the Agricultural Bureau, Mr. Fras. Evelyn Place, B.Sc., M.R.A.S.E., B.V.Sc., M.R.C.V.S., formerly Veterinary Lecturer to the Department of Agriculture, and now on the staff of the Roseworthy Agricultural College, contributed a paper, which was read at a meeting held on October, 31st, dealing with the several aspects of horse management.

In the course of this paper Mr. Place said:—It may be taken for granted that a healthy horse, regularly fed on good food and plenty of it, and regularly worked up to its capacity and not beyond it, will grow into money and not ail anything. And if I were asked the three necessities for keeping it in health, I would say, first, hygiene; second, hygiene; and third, hygiene. It may be thrown back at me that if the blocker himself cannot attain this perfection how is his horse going to? Fortunately the beast has the better chance, an outdoor existence, coupled with a sufficiency of food, and not too long hours of work are its, not only by accident, but because other things claim the master's attention, and so the horse gets its relaxation, because its master is "working like a horse." I can lay down no golden rules as to feed and water. Every horse has individual requirements and tastes. But I can lay down general principles that cover all those individual wants and fancies.

WATERING.

First, watering. What the horse has been used to will suit it best. It may be physiologically wrong, but it will have accustomed itself to it, and any sudden change in the method will upset its digestion for the time. The 8galls. or so that are normally required in 24 hours may have to be increased to 20 in the height of the hot weather, or circumstances may arise when they will be compulsorily reduced to half or less. But it is essential that they should be available when the horse wants them, *i.e.,* in the morning and evening, and in very hot weather during the day as well. Loss of moisture by sweat has to be made up to keep the horse well.

Now comes the debatable point. Should the horse be watered before feeding or after? The question need not worry returned men. They know how service orders set down that it should be before. They also know how service conditions frequently override orders. And here is the answer to the question. Physiologically, the horse with a small stomach and large water bowel should be watered before feeding to prevent undigested stuff being washed through the small bowels where food is absorbed only when properly prepared. In practice a horse that has been accustomed to feed first will still look for that sequence, but may, and should be, gradually brought round to the better way. It stands to reason that, in the early dawn of a bitter winter morning, horses do not want to stroll out to the trough, and physiological requirements can well be met by letting

THE "MORTGAGE LIFTER"

Brunning's Genuine "MESGAWI"

BERSEEM CLOVER

Provides an Abundance of Luscious Fodder right through the late Autumn, Winter, and Spring.

"MESGAWI" BERSEEM CLOVER is an Ideal Winter Fodder. It yields pasture, can be cut for green feed, or made into hay. A splendid soil improver, owing to the fact that it adds large quantities of humus and nitrogen to the soil.

MORE REASONS FOR SOWING BRUNNING'S "MESGAWI" BERSEEM.

1. Can be pastured, cut for greenfeed, or made into hay.
2. Cleanses the land, as the cutting destroys weeds.
3. Can be ploughed in for green manure.
4. Adds humus and nitrogen to the soil.
5. Unequalled as a predecessor to lucerne.

SAMPLES AND PRICES ON APPLICATION.

BRUNNINGS

(F. H. BRUNNING PTY., LTD.),
64, ELIZABETH ST., MELBOURNE.

them have their feed first, then an hour or hour and a half later letting them drink. By that time the food washed out of the stomach will be sufficiently digested to be available in the small bowel, and what is not ready will be at the bottom of the stomach and will not be interfered with.

Then comes the question of letting the horse drink when hot and sweating. Service conditions again settle this point. If the horse is exhausted a long drink will do harm, a short one will do good. Ordinarily it may drink what and where it likes, even if foaming in sweat, so long as it can move around for half an hour after. If it is to be tied up in a draught it can quite well get a bad chill. But allowing for movement after, and specially if it can put its feet into water while drinking, it can drink as much and as cold as it likes with good rather than bad results. Only in some forms of illnesses does a horse require the chill taken off its water, and that very rarely. A cold drink is much more refreshing than an insipid, lukewarm one. Water fairly free from mineral contents is better for horses than very saline water, but speaking generally the salt content of water does not injure a horse's health, and so long as it is reasonably clean it can go on drinking it with impunity.

FEEDING.

Feeding is regulated by much the same principles as watering. It must be sufficient, regular, good and clean. The small size of the horse's stomach shows that its natural way of feeding is little and often, its habits when grazing demonstrate this. More trouble is caused by an overful stomach than by an underfed one, simply because in the latter case work efficiency is immediately lost, while in the former the undue gaiety of behavior will often mislead.

It happens that good chaff, either wheaten or mixed, forms a very satisfactory balanced ration for the blocker's horse, meeting all requirements of maintaining energy and weight when not at work. But man's thinking power must come into play when more than mere maintenance is wanted, and here horsemanship resolves into comradeship with the horse as a working partner. It is not good enough to say a horse is falling off in flesh. One wants to be able to put one's finger on the weak spot and find out why such is the case. A horse may lose bulk and gain condition; on the other hand it may gain bulk and lose condition.

For an average weight of a blocker's horse 1,200lbs. to 1,400lbs. may be taken as a fair live weight scale, and good chaff at the rate of 3lbs. per 100lbs. body weight, taken on an average, forms a balanced ration on which a horse will maintain weight and not lose condition under ordinary working conditions. But it must not be taken for granted that an increase in this amount will be followed by betterment. If a man cannot live by bread alone, a horse can hardly be expected to thrive on chaff by itself. It is not like a bullock that can take cargo aboard and then lie off for eight or 12 hours in the 24 to chew the cud and extract nourishment.

A Feeding Time-Table.

A horse under good conditions gets the nourishment out of what it has in its stomach in less than four hours. When its stomach is only half full—its best working capacity—one to two hours suffice to digest the contents, and three-quarters of an hour more to deliver its goodness to the bloodstream, but the waste of it will be four days or more passing through the system. So we have the feeding time-table arranged for us—Three meals a day during working hours and another later if it can be managed. *Breakfast,* light and concentrated: *dinner,* the smallest meal of the day, but fairly nutritious, because the animal will have to go to work quickly after it when digestion is only half way through; *tea,* the biggest meal of the day, because there is all the evening to consume it, and the loss caused by the day's work to be made up. Then, as the horse does not sleep continuously through the night, a sheaf or two of hay to play with in his waking hours.

But when heavier work comes on, concentrates of some sort are indicated. There is nothing better than good, sound oats, from 1lb. to 1½lbs. per 100lbs. live weight, but in mixed chaff it is quite possible that a sufficiency is already available, and the concentrate that is best then is bran, ½lb. per 100lbs. live weight.

A lump of rocksalt in the manger steadies down greedy feeders and stimulates shy ones. Speaking generally, it is more useful than salt sprinkled in the feed.

Little and Often.

If some such line is taken a horse can be kept at efficiency point. But the quantities are not to be tipped into the manger for a week's supply or even for a day's. The horse is naturally a dainty feeder and likes each meal separately served in a clean manger or nosebag, and the average South Australian nosebag is a stinking futility, filled and refilled, never shaken out or sunned. A slit bag pegged on the ground Indian fashion is a much cleaner, healthier way of feeding.

One of the reasons why horses lose flesh during hard work is because too much feed is given at too long intervals, and when they show a falling off the trouble is augmented by an increased quantity of chaff, probably second-rate and low in feeding value. What is wanted is oats and bran.

A horse prefers its food dry and clean, not mushed up in a sour, wet mess that prevents it blowing out the dirt. It eats it because it is that or nothing, but it is none the better for it, and is laying down "reinforced concrete dams" in its inside by eating it.

A friendly interest in a horse's feeding does not mean that it wants cossetting with molasses, oilcake, and the like. The horse is a grass and grain eater, and Nature provides it with the apparatus to deal with such if it gets a fair chance to tackle it. Condition powders, spices, and so on are not necessary for feed and have practically no food value, and are costly out of all consideration as a means of improving matters.

GROOMING.

The one conditioner that is sadly neglected in South Australia is grooming. Elbow grease applied with a dandy brush is worth 2lbs. of oats a day to a horse, besides hardening up the muscles that have to bear the brunt of friction and pressure during work. I freely grant it is a problem for a farmer with a couple of big teams, and then I scarcely like to enforce it, though I know its value. But to the blocker with his small horse strength it will be the best preventive medicine he can give his horse for all the ailments on our list.

WORMS.

Worms seem to trouble owners more than they do horses, for 99 out of every 100 stabled horses in South Australia have them more or less, and 66 per cent. of outsiders. If there is anything to be learnt from this, it is that worms are a constant condition and stable mismanagement is to a large extent the reason for them. The leaflets issued by the Department will give details as to their habits, life history, and so on, and now I shall but briefly touch on one or two points that may be of special interest to members of this branch. Bots, long round worms, threadworms, and bloodworms are probably those that annoy.

Bots cause no special symptoms bar those of stomach irritation. By themselves they do no harm beyond upsetting the digestion somewhat. They may be got rid of by starving the horse for 24 hours and then giving half a teacupful of ox or sheep gall in a pint of warm milk, followed an hour later by an aloes ball or pint of raw linseed oil to clear them through the system. Long round worms in working horses do not do much harm. When they appear green feed is shifting them or they can be more quickly sent out by 1½ pints of raw linseed oil and two tablespoonfuls of turps or a handful of sunflower leaves chopped up in feed once daily for a few days. The worms, however, when very numerous are dangerous to young stock, which should be cleared of them during the first year or two of life. Threadworms or pinworms show their presence by causing the horses to rub its tail, and by a fine yellow dust below the dock. An injection of a gallon of warm milk with four tablespoonfuls of turpentine, or a good double handful of salt in 2galls. or 3galls. of warm water will clear them out.

Bloodworms do upset a horse more, because they interfere with the circulation in the arteries supplying the muscles of the bowels as they grow to maturity in these vessels. Symptoms and means of detecting their presence may be found in the leaflet "Bloodworms," and an efficient treatment is two tablespoonfuls of Fowler's solution of arsenic in each morning feed for a fortnight, then stop for a fortnight, and repeat for a third fortnight. This treatment does not interfere with work nor is it harmful to infoal mares. It sterilises the worms and prevents the development of new broods. Grooming is one of the best ways of preventing the development of bloodworms by stimulating the circulation with rich and protective blood.

I have purposely dealt very briefly with worms because their bad effects will appear as what is commonly known as stoppage of the water, the symptoms and early home treatment of which should be the common knowledge of every horseowner. They may be found in sufficient detail in "First Aid to the Horse."

WATER STOPPAGE.

What we call water trouble is only remotely connected with the urinary system, but the name has come into common use and remained because one of the early symptoms is failure to pass urine, and relief follows its passage. This is explained by the fact that the horse can hold its water more comfortably than it can stretch out in its usual posture when passing it if it has pain in its belly, so that water trouble is really belly ache, and whatever its cause it shows in three main forms. First, there is that commonly known as stoppage of the water. It is really acute belly ache arising from the rapid formation of gas in the bowels, the windy colic of textbooks, one of the commonest of the horse's troubles.

WINDY COLIC.

A typical case runs somewhat on these lines:—The horse has a change of feed from dry to green or a change of dry, has not much time to eat it, goes to work soon after, is dull, breaks out in patchy sweats, scrapes, throws itself down, seems to want to pass water, but does not try very hard; or it may come into the stable, paw and scrape, refuse to eat, roll and throw itself down, swells on the off flank, then on the near, the pain is continuous, the pulse fast, but temperature remains normal, the eyes are not very red. The animal often recovers in an hour or dies in a few hours, generally from ruptured bowel or other internal organ, such as the diaphragm.

Treatment must have two main objects (1) to reduce the pain quickly, and (2) clear the bowels of their fermenting contents. The latter is best done by emptying the bowel by back raking. Well grease the hand and arm, make the fingers into a cone and gently twist them into the bowel. Remove what dung is within reach and wind will follow much to the horse's relief, especially if the flanks are rubbed well to stimulate movement of the bowels. This is the end nearest the trouble and injections are very useful. Use 4galls. of warm soapy water, or a gallon or two or warm milk, with a couple of tablespoonfuls of turpentine in it, or 20galls. to 30galls. of water from a tap passed in by a hose. This may seem drastic, but is quite safe and very effectual.

Many things are good to give internally, and one of the best, if one is prepared for trouble, is 1oz. chloral hydrate in a pint of warm water as a drench or injection behind. But, generally, one is caught unprepared and recourse must be had to the kitchen shelf. A pint of raw linseed oil and a tablespoonful of turpentine is an old standard remedy and one of the best. Half a pint of gin or other spirit with a teaspoonsful of essence of peppermint and half a pint of warm water is a great standby. Another handy remedy is a handful of charcoal or wood ashes in a pint of warm milk or beer. Warm water or beer forms a good vehicle for a knob of blue, a dessertspoonful of baking soda, or, at a pinch, washing soda, and better, a teaspoonful of cloudy ammonia in a little cold water. Two other handy and effective remedies are a tablespoonful of mustard, as mixed for use, put on the tongue, or a bottle of sauce as a drench. All these are emergency remedies, and others may be found in the bulletins referred to. The best are warm water and elbow grease.

IMPACTION COLIC.

The next form of belly ache is closely allied to the last. It is not so acute, but quite as dangerous. It is called impaction colic, and the acute symptoms come on after feeding. The general symptoms are a constant desire to lie down with the head round to the flank, and one hind leg and one fore stretched out. The bowels are bound up, or dung is passed in small quantities and often with wind. Water is held, but passed in big quantities now and again. It is dark and oily. An attack generally ends in an acute windy form and fatally. But as there has been a fortnight or so in which to treat it, it should not end so. First relieve the pain by any of the above remedies, specially injections and rubbing, then oil, linseed or kerosine, repeated in two days if the bowels do not respond, but not before. Then nux vomica, tincture 20 drops or powder one teaspoonful, twice a day on the tongue or in feed, with occasionally 20 drops of ammonia or a teaspoonful of powdered salammoniac. Do not suddenly change the feed, but gradually increase the amount of bran until the daily feed is mostly composed of it, and some may be given as a warm mash with advantage.

SPASMODIC COLIC.

The last form of colic is, perhaps, the most serious. The pain comes on after hard, prolonged work, it is sharp, but intermittent. At first the horse throws itself about, but later it is more careful how it goes down, bending knees and hocks. The pulse and temperature begin to run up, eyes get red, the horse sweats all over, and in a few hours dies exhausted. This spasmodic colic calls for warm stimulants, gin, and such like spirits, hot beer or coffee, rugs, and plenty of elbow grease.

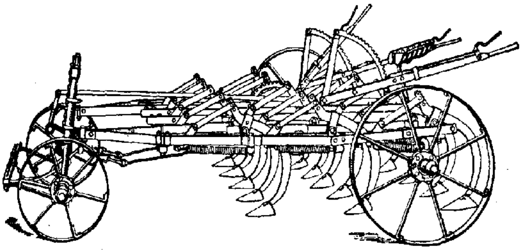
It may be taken that all water troubles are colic in one of these three forms, and they have occurred on account of three faults—(1) faulty feeding or watering; (2) too long hours of work without a spell; (3) exposure, exhaustion, or neglect. Worms play a part in causing such troubles, but it may be taken that the horse liable to worms is one that has lost tone through mismanagement.

MUSCLE TONE.

Muscle tone is the best preventive of both colic and worms, and is best produced by a brush and plenty of elbow grease. As all worms have a stage of existence outside the horse, grooming is the best preventive, for when muscle is in tone, worms are soon got rid of, and when the bowels are in tone all the goodness of the feed is made available. The toneless bowel is the favored home of worms, because it is a dung tip full of useless muck. So we have come step by step to learn that commonsense feeding and watering mean best work of

TRAEGER'S
Stump-Jump Implements

Ploughs, 4 to 10 Furrows. Cultivators, 13 to 21 Tynes.



The illustration shows our 17-Tyne Ideal Lock Spring Cultivator. This implement has proved itself invaluable in hilly and stony land; it is easily adjustable, and will stand up to the roughest work. We also supply bridle draught cultivators, if required, and can deliver from stock. We also manufacture

PLOUGHS,
HARROWS,
HAY TROLLIES.

Our hay trollies are well known and require very little comment on our part, but we would like to stress the following points:—

Soundness of Construction and Seasoned Timber, Correct Setting of Axles and Alignment, ensuring the Lightest Possible Draught.

ASK FOR AND SEE THAT YOU OBTAIN

TRAEGER'S CULTIVATOR SHARES

From your local supplier; if he cannot supply we will be pleased to send your requirements direct.

PRICE LIST AND PRINTED MATTER ON APPLICATION.

J. G. TRAEGER & SONS,
HAMLEY BRIDGE, SOUTH AUSTRALIA

the body muscle and best work of the bowel muscle, because the latter is not burdened with useless material, and so worms have no liking for it as a home.

SORE SHOULDERS.

It is not a far cry from these troubles to the next—sore shoulders, but friction is their main source.

On service, sore backs gave more trouble than sore shoulders, and they were due to pressure, which is a very secondary cause of sore shoulders, causing only the sore on the top of the neck from downward pressure of the pole strap, and resulting in a very troublesome sore akin to fistulous withers. The other sores, commencing as scalds and ending as indolent ulcers, are all friction sores. Therefore, minimise friction and have no sores. Nature has her way of doing this; she packs the collar bed with hard, round muscle, resilient, and lubricated with a thin layer of fat, so that it rolls under the collar while keeping in close touch with it. We call this hard condition, and as long as it is there sores will not appear. They come because of mistakes in feeding, mistakes in overworking, mistakes in adjusting draught. To prevent them feed well, work hard, but not over long, watch the hames hook.

I have gone into detail in a leaflet, "Sore Shoulders," which I would recommend any one whose horses suffer to get. A horse falling off in condition will lose as much as 3in. across the chest, so the collar becomes too loose and soon causes sores. To start with, a good fitting collar should allow room for the fist between the collar and the throat, and for the flat fingers between the collar and the sides of the neck. It must not flatten out at the top, the hames and housing strap prevent this, and it must be kept clean.

The best way of keeping muscle in condition is a daily use of elbow grease. The want of this is one of the commonest causes of sores. Every man has his own pet remedy for sore shoulders. It is a good one if it prevents friction and heals; it is bad if it hardens and scabs. The latter are drying powders like alum, the former boracic acid, carbolic ointment, and so on. Ventilation of the shoulders by a bran bag is excellent, and if after the first round the team is stopped and the shoulders wiped dry with a bag or the fingers much trouble will be saved. Leather instead of check lining reduces friction too. Do not spoil a good collar by cutting holes in it, get up the horse's muscle instead. So do not work till you must spell, but dress the shoulders early and work while healing.

GREASY HEELS.

Greasy heels follow poor horsemanship as naturally as sore shoulders and water troubles; they are only another manifestation of errors in diet and mistakes in management. Nature provides a tuft of hair at the back of the fetlock, it is the "foot lock," to protect the tender skin below. We often go to extremes and grow feather that is a drag on the circulation at a part of the body that is a long way from the heart and naturally inclines to bogginess. We see this in legs that are inclined to fill after standing sometime. In South Australia we want the fetlock, but not the feather. Then we want to feed so that all requirements of the body are satisfied, but that excessive waste is eliminated by the proper organs, the bowels, the kidneys, and skin, which last does as much as the other two put together, and therefore cries out for elbow grease and brush. Then, too, dirty legs and matted hair invite parasites to make their home in the skin and thicken it, so there, too, the brush is wanted.

Clean blood, dry bedding, and good food will prevent greasy heels, but some conditions of irrigation work are very trying, and the best way to deal with them is to let the legs dry naturally and brush out the dirt a couple of hours later. Not a very inviting idea to a tired man I will admit, but better than loss of the horse's work. A loose bandage of strips of bran bag, hessian, or old flannel loosely applied to the legs will help them to dry, or hay bands may be used as a substitute, but always the brush afterwards. You may be tiring of the brush, the brush repeated so often when there is such a thing as a curry comb. I know it, it is quite a useful thing in the stable—to clean the brush with—not the horse.

In the early stages, opening the bowels with salts, bran, or sulphur in the doses given in "The Medicine Shelf" will lessen the damage, also camphor ointment, 1–4 strength, applied to the heels twice a day. Later, when knobs as big as potatoes hang on to the swollen leg, let some one else have the horse to treat; it will pay to be rid of him. But if anxious to try, dress daily with a lotion made of 1oz. each of sugar of lead and sulphate of zinc in a pint of rainwater and a pint of methylated spirit. Dry well by brisk rubbing, and then dust with boracic acid if legs are white, with fine charcoal if black. But always remember that greasy heels start in the stomach.

CRACKED HOOFS.

Cracked hoofs, I take it, are those shelly cracks that sometimes throw a horse out of work; if sand cracks and so on are meant then consult "First Aid to Horse." Ordinary cracks are due to loss of moisture from inside the hoof or excess of wet from outside. In both cases the trouble arises from destruction of the waterproof cover of horn to be found growing down the outside of the hoof, which is so often rasped off by the smith in order to make a "neat job" when finishing shoeing. But in South Australia it is more often rasped off by sand and dry earth, so a substitute must be found for it. A cheap one that answers well is mutton fat and Stockholm tar in equal parts melted together and well brushed into the horn once a week.

In closing, I offer a word of warning. If you want to escape trouble never buy a horse that has any of the weaknesses we have been discussing. If they occur with one man they will be very likely to happen with another, and the time taken up by tinkering about with a sick horse can be much more usefully employed about the block. Even if you drop a bit on his sale you will gain it in the time used and not wasted.

THE WINE INDUSTRY.

[A paper read before the Renmark Agricultural Bureau, by T. C. ANGOVE.]

I had not expected that, so soon after my return from a rather busy trip to the Eastern States, I should be called upon to fulfil a promise to address you on the wine and spirit industry. However, in the short time at my disposal I have done my best and trust the matter may be of interest.

From the earliest of known time, wine (and its first cousin, spirit) has played its part in the scheme of existence, having a large field of use in many activities. As a beverage it is within the reach of the poorest, and in its choice and highly refined forms has delighted the heart and tickled the fancy of kings. Used with discretion it adds zest to life, strengthens the invalid, and stimulates the action of the organs of the worn and over-worked body. Used to excess, it destroys the mind, debauches the body, and eventually kills, by destroying the tissues it once nourished.

The industry is widely spread all over the world, and for the purpose of this paper might be divided into two main classes—(*a*) Wine industry, (*b*) spirit industry. We will deal with the wine industry first, and for convenience, will treat the subject under its several headings:—Raw material, manufacture, by-products, maturing, marketing. The raw material, or basis of wine, is, as you know, grapes, and you are all familiar with the cultivation of the vine, and the growth and harvesting of its fruit. But some remarks on its distribution in the world, and the varieties of vines in relationship to different classes of wine, may prove of interest.

FRANCE.

France has many departments, of which we might mention the Gironde divided into five districts, the land varying very considerably from low marshy territory on both sides of the river to gentle slopes and high table lands. The grapes mostly grown are Cabernet and Sauvignon, and we find such celebrated vintages as Chateau Lafitte, C. Marquax, and Chateau Latour, all clarets grown in this department. Grenache and Carignane form the dominating varieties of grapes grown in Rousillon on the oriental Pyrenees, and though dry wines are made here, liquor wines and fortified wines, principally red, predominate.

In the Rhone Valley, whose greater part has a calcareous soil, which on the left bank is mixed with clay and pebbles, and in some parts has a granite formation, they rely on Grenache, Picpoul, Tinto, and Terret Noir, all black grapes. It is said of this district, Grenache gives alcohol and finesse, Picpoul generosity, Tinto color, and Terret Noir quality.

Probably the oldest viticultural country in Central Europe is Burgundy, and from this district come wines so popular and famous that Champagne only has taken their place. The grapes principally relied on are Pinot and the Gamay. The best wine is grown in the Cote d'or, or "Golden Hill Side," a range of low hills from 200ft. to 300ft. high, 36 miles in length; and on their eastern side bordered by an enormous fertile plain, which stretches to the Jura Mountains. The hills are of loose chalk and a little clay mixed. And for 30 miles are one unbroken line of vineyards, extending into the plain for a distance of from one to two miles. From the northern part of this district comes the celebrated name Chablis, a wine made from the Chardonnay or White Burgundy.

With the province of Champagne we will leave France. It is divided into four viticultural districts, of which the Marne is the best and most celebrated. The soil consists mostly of chalk mixed with silica and clay. The varieties of vines are Pinot and White Burgundy. Of the wines made in these districts I need not speak; everybody has heard of them.

GERMANY.

Turning to Germany we have the districts running along the Rhine and the Maine, Alsatia, the Palatinate, Rhenish Hesse, The Upper Maine, Baden, Wurtemburg, and North of the Main, Hesse. Of these, the district of the Palatinate, in Rhenish Bavaria, is the most celebrated. The land is a kind of high plain between the mountains and the Rhine valley, its soil is alluvial, carried from the mountains, and its inclination is not great. The vineyards are exposed to the east.

From this district come the famous light dry wines of Germany, made from the Chasselas and the Riesling. These two grapes are now being freely mixed with a grape called Traminer. The Chasselas gives the wine good lasting qualities, the Traminer body and smoothness, and the Riesling a beautiful bouquet.

The wines of the Lower Maine and varieties of vines resemble those of the Rhine and Upper Maine, and it is not until we come to the Moselle that we find an outstanding type of wine. The foundation of the soil is a kind of clay schist, of blueish grey, greenish black, and reddish color, and the cultivated soils consist of disintegrated clay schist, with many fragments of quartz. The vineyards all have a southerly aspect—and the varieties of vines are Riesling and the Albuelis. The wine is thin and has the character of a Rhine wine, but not its flavor or keeping qualities. It matures quickly and is artificially flavored with a tincture of the flowers of the elder shrub. This flavor, "essence of Muscatel," is used to give the wine the bouquet peculiar to sparkling Moselle.

The wines of Austria are of poor quality, and are both red and white. Those of the Kloster Neuburg districts of lower Austria are mostly red, and made from a grape called the Early Blue Portuguese, and are commercially payable.

In Hungary vines are grown in a variety of soils, chalky hills, basaltic soils, and lake soils, consisting of one-third chalk and two-thirds clay. Two predominant grapes are grown here, Furmint or

White Tokay, and Kadarka, a black grape. The latter grape makes a poor wine, but the former, White Tokay, a high class wine, of sweet, fine flavor and slight amount of alcohol; it is kept a long while in bottle, and has been known when 50 years in bottle to command from 40s. to 66s. per small bottle.

SPAIN.

Throughout all historical times the vineyards of Spain have been foremost in the world. The mountains which run along its extensive coast line, and accompany its rivers, offer the most favorable situation and most fertile soils for viticulture. The southern position ensures a sufficiency of sunshine to mature the grapes with more or less perfection every year, and the proximity of the Atlantic on one side, and the Mediterranean on the other, brings the moisture by the aid of which the vine luxuriates. Though Spain produces no red wine that can compare with the fine red wines of France—the Medocs and Burgundies, or the Palatinate Riesling wines, in the dry fortified wines, such as Sherries, and in some sweet wines, such as Malagas, they excel all other nations.

The districts from which the grapes are gathered for the manufacture of sherry contain four different types of soil, and this determines the quality of the wine. The finest quality is grown on the highest ground, where the soil is composed of carbonate of lime and magnesia mixed with clay. Then comes a red iron ochre soil producing a very fine wine. Next alluvial, and finally sands, these last two producing only inferior wines. The dominating grape appears to be the Palomino, and next in frequency the Perruno, and Canocoso. Other varieties are grown, the most important being called the Albillo, which is supposed to be identical with the Pedro Ximenes, but this is doubtful. The districts of Catalonia, Aragon, and Valencia produce some beautiful wines, of which Spanish Port or Catalonia is well known.

Quite different is the district of Malaga in the Granada. It is very mountainous, the hills consisting of clay schist with veins of quartz, and beneath this formation there is chalk. The clay schist varies, some disintegrating easily, and some being more solid, the former growing the better wines. The peculiarity of this district is that the vines bear three crops in one year. The first, in June, is used for raisins only; the second, in September, makes a dry wine resembling sherry. The third gathering takes place in October and November, and is used for the famous sweet wines known as Malagas. There are seven types of these, two of which are well known, First Malaga and Second Malaga Muscat.

PORTUGAL.

Leaving Spain we come to Portugal, and if we enter by the River Douro and travel down it to Oporto, we shall pass a tributary called the Corgo. On both banks of this river, for a distance of 42 miles, are the famous Port vineyards.

The soil is of an exceedingly stony nature, rendering the use of the spade impossible, a specially made hoe only being used. The grapes

SAVE

TIME

WORRY

AND MONEY.

YOUR

INCOME TAX

difficulties are all done away with by placing your matters in our hands. We compile both State and Federal Returns, and supply you with a service for the small sum of from 10s. 6d. per annum. You owe yourself a duty by having your returns prepared correctly, and as taxation grows more complicated each year, it is imperative that you place your affairs in competent hands immediately.

All matters coming into our office are STRICTLY CONFIDENTIAL!

We CHECK ALL ASSESSMENTS.

WRITE OR CONSULT US IMMEDIATELY, ADVICE IS FREE.

THE INCOME TAX COMPILER

COMPANY, LIMITED,

UNIVERSAL BUILDINGS, GRENFELL ST., ADELAIDE,

Public Accountants and Auditors, Taxation Attorneys, Financial and Real Estate Agents.

DIRECTORS:

G. E. THOMPSON, Manager.

I. GOLOSKY, A.C.U.A., A.A.I.S.
(Late of State Taxation Dept).

A. SAIDE, A.F.I.A., Secretary
(Late of Federal Taxation Dept).

are the Verdeilho, Mourisco, Bastardo, and several others, but the above three are the favorite. Wines are also grown in the neighborhood of Lisbon.

The Atlantic Islands can be divided into three groups, Madeira and the three Desertas, (2) Canaries, and (3) the Azores. The Madeira soils consist of a basis of chalk overlaid by the eruptive products of a now dead volcano. Of the varieties of vines grown the Malvoise yields the best Madeira wine.

The Canaries soils are also volcanic, and the grapes grown are the same type as Madeira, though the wines are not so good.

The Azores produce a wine called Sweet Malvoisie.

The wines of Italy, Roumania, Greece, and the Turkish Islands, whilst in some cases being of good quality have no outstanding features, and the varieties of wines require no special note.

In Asia the district of Shiraz, in Persia, is perhaps the best. The vines are grown on the lower ranges of the Zagros Mountains; the principal grape is the Kishmish. This grape can be used for eating, wine making, and drying.

In Africa, which is gradually coming into prominence, because of the large quantities of wine they make, the soils are principally stiff clays intermingled with light red soils. The principal districts are on the western or Atlantic coasts. The principal grapes grown are the Frontignac, the Riesling, and the Burgundy. The quality of the wine is poor and thin, and has difficulty in finding a market, and large quantities are being distilled into spirit.

With the industry in California and the United States of America we need not trouble further than to state that a great, important, and growing industry, "if reports can be believed," has been changed from an honorable occupation, in which any man can take a pride, to one that depends for its existence on breaking the laws of the country; and the breaking of those laws appears to have the support of a large portion of its inhabitants.

AUSTRALIA.

After this cursory glance at America and the old world we can leave them for the present and review the vine districts in Australia. We find these districts scattered in four of our States, though the two central ones, Victoria and South Australia, are the principal ones. Western Australia practically makes no wine, and most of its grapes are absorbed in the table trade.

In New South Wales the industry is represented in the Hunter River district, and here some of Australia's best light wines are made.

Coming to Victoria and South Australia, we can divide the industry into irrigated and non-irrigated districts, the irrigated districts being mostly on the River Murray. On this river also is situated the large district in Victoria of Rutherglen, where irrigation is not practised. Owing to the enormous area of country over which the industry is spread, and the variations of climate in this large area, most types of wines can be manufactured. When we use the word "type" here, we mean that the wines produced are, in their characteristics, more or less true to known types grown and produced in the old world viticultural districts.

In Victoria, in the Lilydale and in the western districts, we get those beautiful light dry wines, known in France as clarets, and in Germany as hocks. In Rutherglen, in the same State, we get those heavy types of sweet wines full of body and high in spirit strength characteristic of the wines of Spain and Portugal. Again in South Australia, our lightest types are grown in three or four places only, and these isolated spots, two of them being confined to one vineyard only—Highercombe in the Adelaide Hills, and Pewsey Vale, Mr. W. Gilbert's vineyard in the hills at the back of Gawler. The only extensive district is Coonawarra in the South-East, and a vineyard at Kanmantoo for a long time was the basis of St. Heuri claret. On the other hand, districts such as McLaren Vale, Adelaide Plains, and Angaston and Clare produce the heaviest types, big full bodied wines full of sugar and highly fortified.

The type that the river districts will eventually produce it is difficult, at present, to foresee. The only vine suitable for wine making grown in any quantity at present is the Muscatel, or Gordo, as it is locally known, and until growers are educated to the fact that without sugar density in the grapes it is hopeless to make good wine, only the poor thin watery wines we are getting at present will be the result. With currants it is hopeless to try and do any good under 17 degrees Beaume. With Shiraz a better result will obtain, but here again sugar densities will have to be obtained.

A large variety of grapes are grown in Australia. The principal ones in South Australia are Shiraz, Cabernet, Muscat, Riesling, Frontignac, and Pedro. You will have noticed that during the course of this paper only one of these varieties has been referred to in dealing with the vines of the old world. In Victoria, in the old days, the same types were grown as are given prominence in South Australia, but when phylloxera wiped out the vineyards in that State and reconstruction started, men with foresight went to the old world and chose their vines, with the result that these reconstructed vineyards to-day contain types of grapes which are prominent in the distinct types of wines grown in France, Spain, and Portugal.

We, therefore, from the rapid review we have made of this phase of the industry in the world, draw quite definite laws that govern the types of wine made. They are, on broad principles:—

(*a*) Different types of soils produce different types of wines.
(*b*) Different climates produce different qualities of wines.
(*c*) Certain definite varieties of grapes are used to produce different types of wines.

Thus in France, so justly famous for its light dry clarets and champagne, we find Cabernet, Sauvignon, Pinot, and Gamay the dominating grapes. In Germany we get the light dry white wines, Hocks and Rieslings. Here they rely on Chasselas and Riesling. In Hungary, White Tokay made from Furmint and Radarka. In Spain, sherries made from Palomino, Perdeno, Canocoso, and Pedro Ximenes; Portugal, famous for its ports, growing Verdeillo, Mourisco, and Bastardo; the Canaries, Maderia, Africa, and the United States of no outstanding features; and Australia, embracing all varieties of climates and soils, growing a mixture of grapes, making all types of wine, which, though of good quality and distinct characteristic—and in these latter points resembling the wines of the old world—are not old world wines, and eventually will evolve their own standard, and take their place definitely in the world under definite type names.

PROCESS OF MANUFACTURE.

This operation is conducted quite differently in the old world from the new. In the old world the actual results of the manufacture do not appear until after the lapse of several years, and in some cases of longer periods than this. In America, South Africa, and Australia the foundation of the trade is cheap manufacture in large wine cellars, with its natural reduction in cost per gallon, quick maturing, and rapid exchange of the manufactured article into cash. In Europe, particularly Spain and Portugal, the grapes are manufactured into wine in small quantities in small cellars belonging to the vineyard proprietors. The natural coarseness, astringency, and full bodied maturity of the grape enable the raw wine to be safely treated in this manner, and added to this the fact that the industry is split up into small holdings, enabling the grower to use his own discretion and convenience in picking his grapes. This means that physical maturity of the grape is assured, with the result that the fruit is harvested at its best stage for the manufacture into wine. This is a matter of very great importance where long years elapse before the finished article is placed in consumption.

As soon as the making season is over and the wines have had time to clear down, the firms that buy and mature the crude article send their representatives into the country. Long years of experience have established definite types of wines and definite values. These representatives visit every farm, tasting and valuing each proprietor's product and buying at prices so arrived at, taking delivery in due course at large centres, where the wines are received and blended for future treatment.

In France, on the other hand, certain vineyards have given their names to definite and distinct types of wines, and at these vineyards wines belonging to those types are made, stock being replenished by judicious purchases from the surrounding vineyards. It is interesting to note here that when phylloxera gave France its great set-back, and stocks of their high class light dry wines became exhausted, large purchases were made from America, Africa, and Australia for the purpose of keeping their markets open.

Generally speaking, the operations just described refer only to the better class of wines. Wines of a poorer quality, and consumed principally in the country of origin, are nearly all what might be termed "seconds"; that is, the grapes after having had the first quality juice expressed from them are thrown back into the fermenting tanks; sugar, water, and acids are added to them, and the bulk of cheap drinking wines are thus produced.

Turning to the new world, which is principally represented by California, the United States of America, Africa, and Australia, we find a very different procedure. Here, whilst in some cases the small growers have their own cellars and make only their own wines, this is the exception, and not the rule.

The manufacturing operations are conducted by large companies, having extensive cellars, large and up-to-date plants, and they buy very extensively from the growers surrounding these premises. In California, prior to prohibition, it was a common practice for a wine manufacturer to make a vintage of the enormous total of five million gallons. In Australia individual makers have not extended to this figure, but the tendency of the industry is year by year towards the amalgamation or absorption of the smaller makers by the larger firms. The details of manufacture are of little interest to you, and cannot be treated in a paper of this sort, but certain matters of principle can be examined and are worthy of note.

CATERPILLAR

TRACTORS.

Agery, September 9th, 1922.

Messrs. Vrai Limited, Torrensville.

Dear Sirs,

We have tested the T-35 ''Caterpillar'' here, and find we can plough 14¾ acres 3in, deep on hard soil, on a fuel consumption of 12galls. of kerosene and ½pint of petrol.

(Signed) H. CADD & SONS,
Per H. H. Cadd.

This test was run for a period of 5 hours 27 minutes on kerosene, and gave a result of 1s. 10d. per acre for fuel, oil, and grease.

THERE IS ONLY ONE "CATERPILLAR."
HOLT BUILDS IT.

There is a "Caterpillar" model for every job. May we send you particulars?

VRAI LIMITED, TORRENSVILLE, Sole Agents.

IMPORTANCE OF MATURITY.

Competition amongst the makers has produced a tendency to take grapes from the growers as soon as it is possible to make any use of them at all, with the result that practically no attention is paid to the physical maturity of the grape. Controlling this to a large extent is the fact that the harvest lasts for a short period only. Makers having to start early take the grapes in a wholesale manner, only giving moderate attention to sugar contents and acid conditions, with the result that the medium types of wines only can be expected, and are produced. Little attention is paid to important details, such as the one just treated with—physical maturity; and following this, harvesting vehicles used for delivery, cleanliness of picking buckets and containers, separation of the good berries from the bad, balance of the must, and other like operations.

In Europe we find the most careful attention given to the stage of ripeness at which the grape is picked, the picking buckets are most carefully cleansed each day, and no grapes are delivered to the wineries in larger containers than, perhaps, 1cwt., these containers being most scrupulously and thoroughly cleansed. The grapes on receipt at the wineries are placed on large tables and thoroughly sorted, green berries, broken berries, and berries showing any signs of fermentation are separated and placed in separate receptacles. For the choicest and best vintages, no iron of any sort is used, picking tins and containers being made of wood or wicker work. After crushing and separation of the juice, the most careful attention is paid to the chemical constitution of the must, so that it can be made a normally balanced must from the commencement. Temperatures in fermentation are most carefully watched and controlled, in some cases fermentation extending from a period of six months.

Contrast this with Australia, where the grapes are picked in iron buckets which probably are never washed from the commencement of the operation until the end of the season. They are tipped into drays and wagons, generally lined with an old tarpaulin, and in some cases bags, neither of which are washed from one year's end to the other. Should the wineries not take grapes over week-ends, those picked on Friday are left standing in the wagons until Monday mornings, with the result that frequently fermentation starts. The grapes when received at the wineries are rushed through big crushers and put into large fermenting tanks up to 5,000galls. capacity; very little attention is paid to any system of cooling, with the result that the wine has to take its chance, and one cannot expect anything but a medium classed article. Although this is the general practice, there are, of course, certain cellars that pay more careful attention to these details, with the result that the wines stand high in reputation for Australian production.

THE CONTROLLING INFLUENCE.

Knowing these points, and recognising how far Australia is behind the old world in the governing details of this method of manufacture, one naturally looks for some reason to account for the position. And I think it might be generally stated that cost of manufacture is the controlling influence in the Australian trade.

The capital invested in the industry, whilst large, is not nearly sufficient to cover operations, such as have been described—the periods of the maturity of the higher class wines requiring large storage capacity, with its necessary investments of capital. We have to reckon with the comparative newness of the industry in competition with the old world, making it very difficult to obtain prices commensurate with this large capital outlay, and the want of proper organization and exploitation of the markets of the world. All these points, leading, as they do, to a low average return, it is, therefore, necessary for the maker, who must balance his ledger each year, to watch very carefully his cost of manufacture, and produce a wine that quickly matures and which he can place rapidly on the market and obtain his cash.

BY-PRODUCTS.

Here again the countries of Europe are far ahead of Australia, especially in the manufacture of tartaric acid and tannic acids. In France, Germany, and Italy enormous factories handle these lines, and a very large source of income is returnable to growers from these industries. Besides these two articles, tinctures, essences, and flavoring oils are expressed from the seeds. In Australia tartaric acid only has had any attention of note, and even at the present time only one firm is treating lees for the production of tartaric acid, though several chemists will treat wine stone for the same article. I have estimated that from the distillery wash alone of a company putting through a quarter of a million gallons, sufficient revenue can be obtained to pay the wages bill for 12 months, did we know the operations necessary for the extraction of tartaric acid from this wash. Tannic acid is made from the skins, stones, and vine prunings.

MATURITY.

From what has already been said you will have observed that this is a most important operation in connection with the industry. The operation is based on the oxidation of the chemical constituents of the wine over a period of years, producing roundness, softness, and particular ethers—giving natural bouquets, together with a development of the normal flavors of the grapes. The oxidation is aided and assisted by certain mechanical processes, such as fining, filtration, and racking. The operations vary according to the type of the wines, the heavy, coarse, full-bodied wines of Spain, Portugal, and Maderia taking long years to come to their best condition and requiring quite different treatment from the lighter and dry wines of France, Germany, and Austria. This work is done in Europe by an organization which is entirely separate from the growers and makers.

You will remember I stated that in Europe the growers principally made their wines on their own holdings, and that so soon as the wine had cleared from gross lees, valuators went through the districts, classing, valuing, and purchasing the wine. It is from this point that we will now review the position. The wines are received into large central blending cellars, and are there again examined by experts who have given their lives to this phase of the industry, and who command very high salaries, if capable men, because it is at this stage that a man has to be able to tell what the raw material he is working on will eventually turn out, in perhaps 20 years time. After this classification is finished the wines are blended and stored in bulk. They are fined with different clarifying agents, racked and kept at even temperatures. They are invariably stored in wood, no cement being used. The coarse, full-bodied, highly flavored sweet wines, after a period of years in these wooden casks, are racked over into casks that have contained type wines for long years. The method being, at certain periods, from these latter casks to draw off for marketing purposes a certain quantity, say 50 per cent., and to refill these casks from other casks of like blend. The operation is repeated right down through the cellars, thus gradually producing, step by step, wines to take the place of those being put on the market.

With light dry wines a different method is adopted, the wine being classified according to vintage, each year's wines being kept separately. It is kept as in the previous case in wood only and given most careful attention, men going around every two or three days filling the casks up, so that the only air that can get to the wine is through the pores of the wood of the casks in which the wine is stored. Like the full-bodied wines, they are fined, racked, and aerated, though not nearly so drastically as are the sweet wines. The period of maturity is not nearly so long, the essential difference being whereas sweet wines are nearly always matured by the blenders in wood, and sold in wood to the merchants, dry wines are matured partly in wood, and finally in bottle, by the blenders, and delivered in bottle to the merchants. This is not an invariable rule, but generally speaking it is the case, and absolutely so with regard to the highest grade vintages.

The maturing and manufacturing of champagne is quite a different operation, and to deal with this would take too long this evening, but it might be mentioned in passing that it is here that Australia in her sparkling wines of best quality is rapidly approaching the vintages of the old world.

It would be invidious to draw any distinction between the methods described above and those adopted in Australia. Conditions are entirely different, the industry in a comparative sense is in its cradle, expediency has necessitated the extensive use of cement vessels for storage—lack of suitable indigenous wood, and the enormous cost of oak, involving the expenditure of capital beyond the reach of the average company. Climatic conditions make the erection of cellars, in order to obtain comparatively even temperatures, in many places almost prohibitive; and still in spite of all these difficulties, Australia is producing small quantities of wine that will bear favorable comparison with the best of wines of a like type anywhere in the world.

Prejudice, and the inherent conservatism of the English speaking races, are taking a long while to break down. But the day is coming when Australian wines of the better class will reach definite types, and these types will take their places, in quality and value, side by side with those high class wines that quality and time have given the prominence they enjoy to-day.

MARKETING.

It is in this that the profitable result of the whole of the previous remarks eventuate, and it is on the successful accomplishment of this operation that the industry's success depends. The main sequence of operations is: the merchant buys from the blenders, they distribute to the retailers, and the retailers to the public. But in wine, unlike any other trade, there is a class of business which commands very high prices, and in one connection with which only the very best of a nation's vintages can be sold. I refer to the person who keeps a private cellar for the use of himself and his friends. In Europe we have already noticed that the sweet wines are principally sold in wood, and the light dry wines of the better type in bottle to the merchants. Besides the high class dry wines, there is a second and third quality, which is sold in wood, the merchant marketing these, and his sweet wines under some distinct or distinguishing mark. Though frequently using some celebrated old Spanish or Portuguese name for a particular type of his ports or sherries, clarets, hocks, and chablis of the best types are rarely sold under these names, being distinguished by the names of the cellars from which they come.

Cyclone

Spring Coil Fence

HOG, DOG, AND LAMB PROOF.

Cyclone Spring Coil Fence is made of galvanised metal throughout, and is supplied in 5-chain rolls. It is easily erected, and never slacks out, having great elasticity due to the crimp in the horizontal lines. The fence is made of No. 9 and No. 11 gauge lateral wires, with tie wires, No. 13 gauge, every 12 inches.

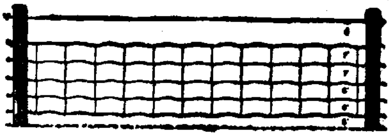


Fig. 7—Cyclone Special Spring Coil Sheep Fence.

The fence illustrated is the famous Cyclone Spring Coil Special Sheep Fence, 5 lines, 26 inches high, with barb wire 9 inches above top line wire, making complete fence 42 inches high.

Cyclone Spring Coil Fence.

This is made for Sheep, Cattle, and all Stock, in various heights from 5 line (26 inches) to 12 line (58 inches).

THE PERFECT STOCK FENCE.

CYCLONE PROPRIETARY, LIMITED,

EXCHANGE BUILDINGS, PIRIE STREET, ADELAIDE.

In Australia you are familiar with the method of marketing to a large extent, and it differs from Europe in that, unless a manufacturer has his own wholesale distributing branches, he does no bottling, merchants buying all their requirements in wood. We have here practically no class of trade which compares with the cellar trade of the private individual of the old world. But there is one point in connection with the Australian industry which should receive attention before we close. I refer to the present and past position of the last few years of the South Australian industry. Some little time ago Victoria was devastated by phylloxera, with the result that practically the whole of her wine vineyard area went out of existence, and the enormous quantities of wines formerly manufactured and sold from this State on the Australian markets ceased. Victoria, to keep its trade going, had to look to South Australia for its supplies, with the result that the industry in this State went ahead very considerably; so much so that South Australia is nearly capable of keeping the Australian consumption supplied. Victoria has now, over a period of years, reconstructed her vineyards on resistant stock, and is gradually regaining her position and will, in the near future, supply again a large quantity of wine. And I say without hestitation that the average production per acre, and the average quality of the wine produced, will compete, to the extent of at least 6d. per gallon, with the South Australian wines. And this position will have to be faced in the near future. Our London wine trade is paralysed and dormant, owing to the want of foresight and enterprise by the industry in Australia, and steps must be taken in the near future to open up the enormous markets of the old world for the benefit of the Australian industry.

Time has not permitted me to deal with the distillation phase of my subject, and I must apologise for not being able to complete it, but if my present remarks are of interest, and you would care to have the distillation phase of the industry at some future date, I will be very pleased to present it to you.

THE PAPER DISCUSSED.

Amplifying the reference in his paper to the advantage which Victorian growers have over those in South Australia, Mr. Angove remarked that the Rutherglen soils produced grapes heavy in sugar and yielding a large quantity of wine. They not only gave a high production per acre, but the wine was of high quality, and the successful reconstitution of the Victorian vineyards would certainly hit South Australia hard.

In reply to a question, Mr. Angove said that the quality of South Australian wines had greatly deteriorated because of the practice of early harvesting and the failure of wine makers to insist on a high sugar density in the grapes. A higher sugar density was essential for quality. It had been the custom to make good the want of sugar by the addition of spirit, but it was much better to get the natural spirit from the grape. Growers would have to learn the importance of physical maturity in their grapes.

Mr. Taylor desired to know what were the prospects for wine grapes on the river. Mr. Angove said he was no prophet. The best wine grape to-day for the river was the Shiraz, and the Doradillo for brandy; but the latter was in a very poor class for wine. Two matters that would affect the river were the growing of suitable types for the river soil and a better class of grapes for wine making. As he had said, he thought the Shiraz the best available type for the river. There were better types in Victoria, but they were not available here. The Shiraz was a heavy bearer and yielded a good type of wine. Whether the quality of wine produced on the river would be equal in quality to that of the other wine districts was as yet doubtful. But they could undoubtedly make a better wine from Shiraz than from the currant, and the Shiraz blended with the currant would make a quicker maturing and better bodied wine than the currant alone. The future trade outlook was problematical. The English trade absorbed about 750,000galls. of Australian wine, but this was a mere drop in the bucket. The better types of Australian wine were not known in England where a heavy coarse type was preferred. The light, delectable hocks and clarets were imported from Europe. Why not from Australia? He thought the business needed organizing, and till that was done there was not much scope for extensive production in Australia. Prospects for brandy were better. If the trade in England could be organized, and the English public got to like Australian wine, then there would be a good chance of development. California had gone out of the wine trade, and South Africa at present had collared California's share with very poor wine. If they were to plant wine grapes on the river let it be with good quality grapes. They must cut out the Doradillo, or by and bye there would be such a supply of these grapes that the wineries would not care whether they took them or not. The first steps to success were to plant the better kinds of vines and to let the grapes mature properly. If they did this they would at any rate be on the right road, and he thought the industry would come out all right.

In reply to questions by Mr. Appleby and Mr. Alexander, Mr. Angove said that it would be a wise plan to paint the tin picking buckets, as is done for raspberries. The Malbec was a very good grape, but it did not do so well in South Australia as the Shiraz.

In moving a vote of thanks to Mr. Angove the chairman (Mr. W. R. Woodham) said that the paper had been highly educational, and they would look forward with interest to Mr. Angove's promised paper on the spirit industry.

PUBLICATIONS RECEIVED.

WHEAT PRODUCTION IN NEW ZEALAND.

From Messrs. Whitcombe & Tombs, Limited, 189, Collins Street, Melbourne, we have received a copy of "Wheat Production in New Zealand: A Study in the Economics of New Zealand Agriculture," by D. B. Copland, M.A., with a chapter on "Improvement in Wheat by Selection in New Zealand," contributed by F. W. Hilgendorf, D.Sc., Biologist to the Canterbury Agricultural College, and an introduction by James Hight, M.A., Lit. D., Professor of History and Economics in Canterbury University College. The subject matter of the volume is sufficiently indicated by the title, and the reason for its appearance is suggested in the introduction, wherein it is said:—"There is a marked tendency to increase the supply of expert technical knowledge, founded on the latest developments of physical, chemical, and biological researches, made available to the farmer by the national funds, and rightly so, but there has been a general failure to appreciate correctly the practical value of research in the economic factors of farming." It is to the latter aspect of agriculture that the author has addressed himself, and in a volume of some 310 pages, has dealt with many of its phases. Chapters are devoted to "The Consumption of Wheat," "The Production of Wheat," "The Quality of Wheat," "History of Production in New Zealand," "The Price of Wheat," "Cost of Production," and other matters. A number of tables and graphs is included in the volume.

PIGS AND THEIR MANAGEMENT.

The appearance of the notice "Fourth Edition, Revised and Enlarged," on the title page of a publication, suggests that the previous efforts of the author have met with public appreciation. It implies considerable interest in the subject matter, and when it is met with in a volume devoted to the subject such as "Pigs and their Management," it suggests also that farmers are not unmindful of the value of literature as an aid to their activities. The author of the volume under notice (Mr. H. W. Potts, F.C.S., F.L.S.) is perhaps best known from his association with Hawkesbury Agricultural College and Experimental Farm, of which institution he was formerly principal. In the volume, which contains some 230 pages, with 98 illustrations, Mr. Potts deals with the different breeds of pigs, breeding, housing, feeding, and crops which can be utilised for this purpose, sanitation, diseases, parasites, slaughtering, bacon-curing, as well as other phases of pig management from an Australian point of view. The book is designed, to use the author's words, "To meet the requirements of the actual breeder and feeder, to guide the uninitiated as a work of reference, and to act as a text book conveniently arranged for the agricultural student." It is suitably indexed, and of handy size.

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., DECEMBER, 1922.

IMPORTS.

Interstate.

Apples (bushels)	4
Apricots (bushels)	15
Bananas (bushels)	9,986
Oranges (bushels)	3
Gooseberries (bushels)	2
Passion fruit (bushels)	76
Pineapples (bushels)	39
Tomatoes (bushels)	21
Cucumbers (bushels)	3
Peanuts (packages)	2
Onions (bags)	1
Potatoes (bags)	5,828
Bulbs (packages)	21
Plants (packages)	9
Seeds (packages)	67
Trees (packages)	1
Wine casks, empty (number)	3,073

Fumigated—64 empty wine casks.

Rejected—42bush. of bananas, 6bush. of tomatoes, and 6 second-hand cases.

Overseas.

Federal Quarantine Act.

Seeds, &c. (packages)	7,137

Of these 101 cases bananas were destroyed.

EXPORTS.

Federal Commerce Act.

Two hundred and fifty packages of fresh fruit, 3,602 packages of citrus fruit, 1,671 packages of dried fruit, 15 packages of preserved fruit, and 6 packages of jam were exported to overseas markets. These were consigned as follows:—

London.

Dried fruit (packages)	400
Jam (packages)	4

New Zealand.

Citrus fruit (packages)	3,602
Cherries (packages)	150
Dried fruit (packages)	1,200
Preserved fruit (packages)	15

South Africa.

Dried fruit (packages)	50

India and East.

Apples (packages)	100
Jam (packages)	2
Dried fruit (packages)	21

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR NOVEMBER, 1922.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during November.	Per Cow during November.	Per Cow October to November.	Per Herd during November.	Per Cow during November.	Per Cow October to November.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/A	14	13	7,650	546·43	1250·04	364·69	26·05	58·34
1/C	31·23	29·37	25,933	830·39	1685·18	1006·13	32·22	65·34
1/E	21·17	18·53	13086·5	618·16	1122·78	536·69	25·35	47·71
1/J	22·97	17·37	12,443	541·71	925·14	512·93	22·33	39·22
1/L	19·10	16·50	11407·5	556·23	1199·37	521·49	25·51	53·56
1/M	21	15·53	10,302	490·57	926·97	470·06	22·38	42·47
1/R	13	9·70	5,833	448·69	976·96	273·80	21·06	44·50
1/T	10	8·20	5,110	511·00	1011·80	243·79	24·38	47·68
1/U	13	3·13	1,924	148·00	455·63	73·45	5·65	19·08
1/W	9·07	8·93	5,056	557·44	1191·67	197·31	21·75	45·34
1/X	18·77	18·77	11979·5	638·23	1359·97	521·98	27·81	59·43
1/Y	16	15	12,315	769·69	1442·53	497·17	31·07	61·01
1/Z	20	17·43	10·765	538·25	1173·68	496·42	24·82	52·62
*1/Aa	7	5	4,425	632·14	—	196·61	28·09	—
*1/Bb	10	7·37	3,709	370·90	—	175·10	17·51	—
Mean	16·42	13·59	9462·57	576·26	1229·35	405·84	24·72	51·80

* Entered November 1st.

RESULTS OF BUTTERFAT TESTS FOR DECEMBER, 1922.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during December.	Per Cow during December.	Per Cow October to December.	Per Herd during December.	Per Cow during December.	Per Cow October to December.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/C	29·19	27·97	25249·5	865·00	2550·18	1019·40	34·92	100·26
1/E	22	18·81	12820	582·72	1705·50	534·89	24·31	72·02
1/J	23	19·65	14037·5	610·32	1535·46	595·13	25·88	65·10
1/L	20	16·87	13167·5	658·37	1857·74	574·92	28·75	82·31
1/M	22	17·68	13,863	630·12	1557·09	635·06	28·87	71·34
1/R	13	9·97	7,313	562·54	1539·50	349·16	26·86	71·36
1/T	10·68	6·81	5531·5	517·92	1529·72	259·85	24·33	72·01
1/U	13·61	6·74	6158·5	452·49	908·12	255·45	18·77	37·85
1/W	11·26	9·61	7002·5	621·88	1813·55	258·82	22·99	68·33
1/X	19·26	18·22	11298·5	586·59	1946·56	474·75	24·65	84·08
1/Y	17	15·29	11154·5	656·14	2098·67	489·44	28·79	89·80
1/Z	20	16·94	10,437	521·85	1695·53	480·10	24·01	76·63
*1/Aa	7	5·90	5,566	795·14	1427·28	237·21	33·89	61·98
*1/Bb	10	6·97	5121·5	512·15	883·05	235·89	23·59	41·10
†1/Cc	14	13·32	7889·5	563·53	—	335·72	23·98	—
Means	16·80	14·05	10441·00	621·47	1850·64	449·05	26·73	78·51

* Entered November 1st, 1922. † Entered December 1st, 1922.

MT. GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR NOVEMBER, 1922.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during November.	Per Cow during November.	Per Cow August to November.	Per Herd during November.	Per Cow during November.	Per Cow August to November.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/A	20	19	15,060	753·00	2994·21	581·11	29·06	124·32
2/B	7	7	7,815	1116·43	4680·15	298·37	42·62	193·11
2/C	20·10	18·47	15,658	779·00	3351·78	595·49	29·63	132·34
2/D	14	10·50	7,073	505·21	2176·83	272·34	19·45	84·04
2/E	11·80	9·67	9,385	795·34	3159·79	400·14	33·91	136·01
2/F	20	20	14,445	722·25	3266·11	566·92	28·35	128·60
2/G	3	3	2,985	995·00	4107·84	120·92	40·31	182·13
2/H	28	28	18·900	675·00	2795·16	761·64	27·20	113·31
2/I	15	14·23	12,0 3	803·52	2828·19	487·92	32·53	114·04
2/J	13	11·87	12,764	981·83	3670·10	527·29	40·56	152·56
2/K	21·60	16·17	18606·5	818·15	2586·93	717·24	31·32	108·69
2/L	33	31	20459·5	619·97	2317·92	884·90	26·82	103·12
2/M	67	61·13	42,106	628·44	2327·13	1,684·00	25·13	95·61
2/N	15	14·43	9,097	606·47	2145·67	347·52	23·17	85·00
2/O	45	40·10	24,903	553·40	1975·87	979·75	21·77	80·12
2/Q	33	31·27	21,045	637·72	2834·61	855·17	25·91	114·03
2/R	16	16	17,355	1084·67	3644·33	725·97	45·37	153·41
Mean	22·50	20·70	15865·29	705·12	2728·84	635·69	28·25	111·84

RESULTS OF BUTTERFAT TESTS FOR DECEMBER, 1922.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during December.	Per Cow during December.	Per Cow August to December.	Per Herd during December.	Per Cow during December.	Per Cow August to December.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/A	19·74	19·45	9,570	524·43	3518·64	421·88	22·89	147·21
2/B	7	7	6959·5	994·21	5674·36	301·93	43·13	236·24
2/C	21·65	20·13	13179·5	608·71	3960·49	607·92	28·08	160·42
2/D	14	12·52	8899·5	635·68	2812·51	376·55	26·90	110·94
2/E	11·90	10	7610·5	639·53	3799·32	339·51	28·53	164·54
2/F	20	20	10,912	545·60	3811·71	496·42	24·82	153·42
2/G	3	3	2309·5	769·83	4877·67	109·43	36·48	218·61
2/H	28	28	16,213	493·72	3288·88	678·51	20·74	134·05
2/I	15	15	10,881	725·40	3553·59	438·48	29·23	143·27
2/J	13	13	12,121	932·35	4602·45	525·39	40·41	192·97
2/K	19·74	17·48	14142·5	716·41	3303·34	592·76	30·03	138·72
2/L	33	31·68	16865·5	511·06	2828·98	793·98	24·06	127·18
2/M	68	62·23	32267·5	483·16	2810·29	1336·57	20·13	115·74
2/N	15	13·35	6,129	408·60	2554·27	247·51	16·50	101·50
2/O	42	38·71	17642·5	420·05	2395·92	753·06	17·93	98·05
2/Q	33	33	15453·5	468·27	3302·88	700·84	21·24	135·27
2/R	16	15·39	14,332	928·32	4572·65	671·14	43·38	196·79
Means	22·35	21·17	12675·76	567·03	3295·45	552·46	24·71	136·55

ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, January 10th, there being present:—Messrs. W. S. Kelly (Deputy Chairman), F. Coleman, H. Wicks, L. Cowan, A. M. Williams, A. M. Dawkins, Capt. S. A. White, and the Secretary (Mr. H. J. Finnis).

Apologies were received from the President (Hon. G. F. Jenkins), Professor Arthur J. Perkins, Messrs. W. Sandford, W. G. Auld, and Col. J. Rowell.

Eradication of Woolly Aphis.—In reporting on a resolution to the effect that "The Government be asked to experiment in methods of eradicating woolly aphis, as nothing yet recommended by their experts has proved successful in combating this growing pest," Mr. Quinn said as follows:—"I desire to report for the information of the Advisory Board that for a number of seasons we have been testing the value of various prepared spraying oils against this pest on some flat-trained apple trees at Hackney Road Orchard, and on standard trees at Blackwood. We can note no difference in the effects when using Gargoyle, Neptune, and Harbas brands. Any of them will destroy the insects if the spray makes good contact with the bodies of the woolly aphides.

"During the past winter at Blackwood a trial was conducted with another spraying oil put up experimentally by the British Imperial Oil Co. So far this appears to give similar results to those obtained from the brands previously mentioned. All of these oils have been applied during the dormant period, when the leaves were off, and the aphides were more open to attack.

"We have also used the well-known American tobacco extract sold as Black Leaf 40, which is claimed to hold in its composition 40 per cent. of sulphate of nicotine. This compound may be used when the trees are in leaf without causing injury to the foliage. It is a very effective killer of all kinds of aphides, but is too expensive at present for extensive use. From our experiments we conclude that by the use of Blackleaf 40 in winter and again in summer, or if one of these spraying oils be substituted for it in winter, to be followed by a spraying of the tobacco solution in summer, the woolly aphides will be kept down in exact proportion to the thoroughness with which the work is done. Carelessly applied the suppressive effects appear to be almost nil, but searchingly sprayed results in holding the pest within bounds.

"I know this is an expensive and time consuming work, but a scrutiny made through all the literature of experimental research done in America and Europe on this subject simply means following around the periphery of a circle, which ends in the same place each time. Half a century ago the discovery of the use of the woolly blight proof—not merely resistant—stock gave high hopes of solving once for all the whole problem, but its use has only circumvented the root inhabiting form of the pest, and has not, as was predicted, thereby lessened to an appreciable degree the aerial form found on the branches. Unless by breeding and selection, varieties of apples can be evolved which not only possess immunity from this pest, but produce high-class fruit as well, I see no hope of eliminating the trouble.

"We have at present in our collection many varieties which are immune to the attacks of the woolly blight, but unfortunately they do not produce fruit which appeals to the popular taste.

"The complete eradication of the woolly aphis by artificial remedies has never, to my knowledge, been accomplished anywhere, and I do not think it practicable."

Proclamation of Innocent Weed as Noxious Weed.—In response to a recommendation of the Advisory Board the Minister of Agriculture reported that Innocent Weed (*Cenchrus tribuloides*) had been added to the list of noxious weeds.

Crop Competitions.—The Chairman (Mr. W. S. Kelly) addressed the members and reported on the work of the sub-committee appointed to deal with the question of farm and crop competitions, after which, on the motion of Mr. Coleman, seconded by Capt. White, the following resolutions were carried:—

1. That the Advisory Board is impressed with the possibilities of good which should follow the extension of crop-growing competitions in this State.
2. That Branches of the Agricultural Bureau should be encouraged to combine into groups for the purpose of holding such competitions.
3. That the Government should be asked to provide a sum of money to enable assistance to be rendered to each such group of Branches which adopts a standard method of judging and conducts competitions in such a manner as to render adequate competition reasonably assured.
4. That the Government should be asked to provide a first prize of £100 for the best crop of wheat of not less than 100 acres, competition to be restricted to the first and second prizewinners in district competitions.
5. That a committee consisting of—
    (1) The Director of Agriculture (*ex officio*),
    (2) The Deputy Chairman of the Board (Mr. W. S. Kelly),
    (3) The Superintendent of Experimental Work (Mr. W. J. Spafford),
    (4) The Secretary, Advisory Board of Agriculture (Mr. H. J. Finnis), with power to add, should be appointed to control generally these competitions.

Advisory Council of Education.—On the motion of Mr. Dawkins, seconded by Mr. Cowan, Professor A. J. Perkins was nominated as the Board's representative on the Advisory Council of Education.

Lower Northern Conference.—It was decided that the Conference of Lower Northern Branches be held at Williamstown this year.

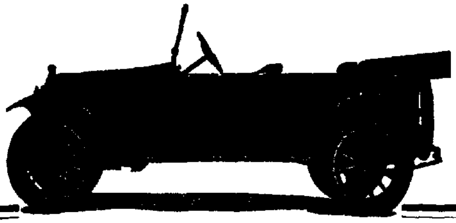
Importation of Flour into United Kingdom.—A communication was received from Mr. C. J. Tuckwell regarding the importation of flour into the United Kingdom from Australia, and stating that it seemed likely that the importation of flour might be banned in the near future.

The Secretary mentioned that 22,252 tons of flour were exported from South Australia, and 103,857 tons from the Commonwealth during the year ended June, 1922, to the United Kingdom.

New Members.—The following names were added to the rolls of existing Branches:—Farrell's Flat—P. Borosky, W. Coon; Tarlee—Thos. Shannon; Pompoota—A. H. Burnett; Darke's Peak—J. B. Davis, J. C. R. Kobelt, C. Kobelt, W. J. Trimble, P. A. Millar, C. A. Noble, G. A. Noble, G. Noble, H. H. Noble, M. C. Kenny, W. W. Wake, E. Lathleen, T. R. Moten, H. Hampel, A. Bruce; Colton—R. Whitehead, J. W. Ford; Williamstown Ladies'—Mrs. W. Grigg; Black Springs—S. A. Foley; Yacka—B. Badman; Wirrabara—R. G. Williams, W. H. Oke; Farrell's Flat—W. H. Powell, R. Bartholomeaus, W. Collins, J. Marchant, L. Lacey, W. Ley, B. Caterer, G. Ashby, A. G. Smith, T. W. McCarthy, S. Elliott, C. Fletcher, J. Howard; Rapid Bay—A. Hamlyn; Renmark—H. J. T. Blake; Narridy—H. J. Wareman, R. Haren, A. Freeman; Balhannah—V. R. Norsworthy, R. S. Morley.

"COAST DISEASE" AND "CRIPPLES."

The disease known as "Coast disease" affecting sheep and cattle has been investigated by officers of the Stock and Brands Department on the West Coast, Thistle Island, and South-East of the State, and has been referred to in Departmental reports from time to time since 1912. The result of these investigations, says the Government Veterinary Surgeon (Mr. C. A. Loxton, B.V.Sc.), in reply to a correspondent, is that the disease reported as Coast Disease is actually a parasitic anæmia. The parasite which is usually responsible for the trouble is a very fine hair-like worm, known as *Ostertagia Ostertagi*, which on account of its minuteness would easily escape observation unless a careful examination is made. It is found in the fourth stomach where it frequently causes a form of gastritis. Most worms are specific, that is to say, worms affecting sheep and cattle are peculiar to those animals and do not affect other animals, such as the horse and pig. This would account for the fact that the latter animals do not become affected with what is called Coast Disease. Another trouble referred to by the correspondent as affecting sheep on heathy country is what is popularly known as "Cripples" (*Osteomalacia*), and is largely due to grazing stock on innutritious herbage. The treatment for this condition is a change to good pasture and the provision of licks of bonemeal and salt. A valuable means of combating parasitic invasion is by means of burning off and pasture rotation. The administration of 1 per cent. copper sulphate (bluestone) solution is also recommended. This may be made by dissolving 4oz. of bluestone in a pint of boiling water and adding 3galls. of cold water. The dose of the diluted solution is 1½oz. for lambs and 3oz. for sheep. It may be repeated at intervals of two or three weeks. This solution should not be made in metal vessels.



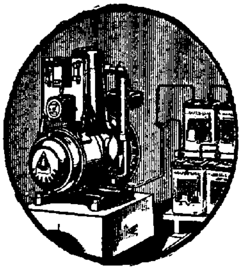
THE END OF THE QUEST.

THE HUPMOBILE

ends the "quest for the best." NO CAR runs better on smooth roads, and none can surpass it in sand or on hills. The Hupmobile will give you unsurpassed service, and no car possesses a higher re-sale value.

INFORMATION AND DEMONSTRATION GLADLY SUPPLIED.

PHOENIX MOTOR Co., Ltd.,
SOLE AGENTS,
112-120, PIRIE STREET, ADELAIDE.



DELCO-LIGHT
The complete Electric Light and Power Plant
USED IN EVERY CLASS OF HOME, BUSINESS AND PUBLIC BUILDING.
25 MODELS. PRICES FROM £110 0s. 0d.
TOTAL SALES, 400.
The S.A. Government have now Purchased 80 Delco-Light Plants.
Catalogue, Advice, Prices—Free.
S.A. Distributors—
PARSONS & ROBERTSON, Ltd., 87, Worando Buildings, Grenfell Street, Adelaide.

HARVESTING MACHINERY.

FIELD TRIAL AT PASKEVILLE.

The attendance of some 4,000 people at the field demonstration of harvesting machinery at Paskeville on January 17th marks this gathering as one of the most noteworthy that has taken place in South Australia. The trial was arranged by the Northern Yorke's Peninsula Agricultural Bureau Field Trial and Show Society. This body is made up of two representatives from each of the following Branches of the Agricultural Bureau:—Bute, Paskeville, Kadina, Moonta, Pine Forest, Port Broughton, and Dowlingville.

The society was founded in 1894, and held its first trial at Bute on July 1st, 1895. Since then it has arranged annually to hold one and sometimes two gatherings. The President of the society is Mr. J. P. Pontifex, of Paskeville, and the Secretary Mr. L. E. Simon, of Bute.

The trial this year was held on the block which has been set aside by the Government for the purpose. This was carrying a crop of Marshall's No. 3 wheat. The crop was marked off into areas of about two acres, and different types of harvesting machinery were set to deal with each of these blocks. In all, eight different types of harvesters were on the field, and eight types of tractors, in addition to horse teams. The arrangements were in the hands of Mr. J. Prowse, Hon. Secretary of the Paskeville Branch of the Agricultural Bureau, and were carried out in a most satisfactory manner.

The Department of Agriculture was represented by the Director of Agriculture (Professor Arthur J. Perkins), Mr. F. Coleman, and the Secretary, Advisory Board of Agriculture (Mr. H. J. Finnis). During the afternoon the gathering was addressed by the Director of Agriculture, the Secretary, Advisory Board, Mr. J. C. Price (Vice-President of the society), and Messrs. Tossell and Allen, M.'sP.

FIELD TRIAL AT PASKEVILLE.

Approximately four thousand persons attended the Field Demonstration of Agricultural Machinery held at Paskeville on January 17th, under the auspices of the Northern Yorke Peninsula Agricultural Bureau Field Trial and Show Society. As is indicated by the illustration, a keen interest was taken in the different types of tractors and harvesting machinery at work.

ORCHARD NOTES FROM THE NORTHERN DISTRICT.

[By J. B. Harris, Orchard Instructor and Inspector.]

Points of interest which have come under notice during the past few weeks are (1) the abuse of Bordeaux mixture; (2) a premature decay of apricot fruits; and (3) samples of evaporated fruit.

(1) Abuse of Bordeaux mixture.—Attention was recently drawn to a serious destruction of foliage on vines a few hours after the application of a so-called Bordeaux mixture prepared from 8lbs. bluestone, 8lbs. quick lime, and 50galls. water. Apparently Bordeaux mixture prepared so has been previously used in the district without injurious results, the assumption being that 8lbs. bluestone was not an excessive quantity if sufficient lime were used to neutralise the copper sulphate. The operator assured me that the spray was neutral at the time of application; it is well to realise that the spray does not remain neutral after application, if it did so it would not affect the fungus causing disease. After the spray has been applied the water evaporates, leaving only the solid matter. This solid matter is acted upon by the natural moisture and carbon dioxide of the surrounding atmosphere, and chemists have declared copper sulphate or pure bluestone is again formed, although in invisible quantities, and it is this copper sulphate which destroys the fungus. An excessive quantity of it will also destroy the leaf on which the fungus is growing.

Fifty gallons of spray will cover the same area of foliage whether it contains 6lbs. or 8lbs. of bluestone, but the amount of bluestone is obviously not the same. An 8-8-50 spray has been sometimes safely applied, but, in this case, in which the application was followed by a heavy dew, which probably hastened the release of copper, whereas a light rain might have washed the injurious quantity off, or less humidity of atmosphere would have delayed the release of copper, it resulted in the partial destruction of the foliage. From the foregoing it would appear that the orchardist or vigneron who prepares spray mixtures on the principle that he cannot have too much of a good thing is likely to do harm. It is advisable to follow a standard formula as experiments are generally too costly for the average grower.

(2) A premature decay of Apricot fruits.—A decay of apricots at about the time of ripening has been noted at two places in the Barossa district this year, and, though it has not yet done extensive damage, the fact of its appearance may be of interest to growers. A fungus, which I am disposed to think is apparently that which has been known to cause "brown rot" in America and New Zealand, and has been reported as attacking all stone fruits in Victoria, is the cause of the decay, the mycelium of the fungus being found throughout the decayed tissues, and fruiting bodies having resemblance to those of the brown rot fungus being also present at a later stage.

All fruits examined had decayed from the point of juncture with the spur, or from a point where the skin of the fruit was broken. In the worst affected trees many twigs and spurs had died; it is a significant fact that in both cases the spraying of the trees had been neglected. The disease caused the softening and browning of the fruit when in the pale green stage preparatory to the ripening period, the softening and rot finally involving the whole of each affected fruit, which still adhered to the tree.

Moisture, as with other fungi, favors the increase of the brown rot fungus—*Sclerotinia fructigena*—and it is probable that the moist summer and lack of spraying are responsible for the appearance of this particular rot.

(3) Fruit for evaporation.—A fruit evaporator which will dry fruit well, and at the same time quickly and cheaply, is likely to be a valuable asset to a district where fruitgrowing is carried on extensively as it may considerably improve the profits in a glut season. No evaporator, however, has yet been produced which will convert an inferior sample of fruit into a first-class dried product, consequently it is desirable that fruit submitted for evaporation should be free from disease or other blemish, just sufficiently ripe, and of good size and texture.

In examining samples of dried fruit, all of which have had equal care and attention at the evaporator, the necessity for submitting a first-class sample of fresh fruit is obvious. Some samples of fresh fruit submitted point to the necessity for emphasising the fact that adequate attention must be paid to spraying, pruning, and cultivation if a good sample of dried fruit is to be produced.

ORCHARD NOTES FOR SOUTHERN DISTRICTS.

[By C. H. Beaumont, Inspector and Instructor.]

See that the late apples have a coat of spray on them; there is no better spray than arsenate of lead. Use it with a good pump, and it will provide a good insurance against possible loss.

Do not allow fallen fruit to rot under the trees; pull it together with a rake and bury it if there is no better use for it.

If you intend to do any grafting later on, mark the best bearing and growing trees and vines, so that no mistake will be made when taking the necessary wood.

The occurrence of downy mildew should have made vignerons very watchful; where it is expedient to spray, do it thoroughly. If you find a few diseased leaves or bunches of grapes, burn them on the spot as soon as found, including any that may have fallen. Bordeaux or Burgundy mixture is the means of control.

In orangeries where brown rot is known to exist, land should be prepared for sowing an early crop at first opportunity; get well under the trees.

Irrigation will probably be necessary for all young trees and vines, but especially for the citrus trees. Thoroughly moisten the soil around the trees, without allowing surplus water to run to waste. Before the soil sets cultivate well, and you will get the greatest advantage from the added water.

If packing fruit for export or storing it is good to have it in your own shed at least overnight, to cool, before wrapping. See that your cases and brands, &c., are in accordance with the regulations.

Woolly aphis should be watched; very hot weather will reduce it somewhat, but continuous care is necessary.

BLUE MOULD OF CITRUS.

Blue mould is the most common source of destruction to stored citrus fruits in all parts of the world. It is caused by a fungus known as *Penicillium glaucum*, which, says the Horticultural Instructor (Mr. Geo. Quinn), is quite omnivorous in its tastes. It grows on any form of organic matter, but requires abundance of moisture to enable it to propagate rapidly.

In so far as fruits are concerned, it is essentially a wound parasite. It does not appear to have power to break through the resistance offered by the epidermal skins of sound, firm fruits. When, however, the skin of a fruit has been softened by contact with constant and long-applied moisture, the thin epidermal cells appear to become killed or atrophied, and the filaments of the fungus do penetrate to the juicy layers below. In practical fruit packing and storage this fungus is circumvented to a degree corresponding (1) with the complete unbroken character of the outer skin and (2) with the maintenance of comparatively dry atmospheres in the store. To secure these desirable results the points which suggest themselves as practicable in handling citrus and other fruits are—(1) Care in selecting fruits which are not too ripe, (2) picking and handling them from tree to packing case with the utmost care to avoid scratches, bruises, or pricks, which break or weaken the outer skin, (3) to select only those still sound when packing, and (4) to wrap and pack the fruits securely in appropriate papers, and in a case designed to protect them during transit. Handling the cases with due care, stowing them in holds with sufficient provision to permit air to circulate around every box, and the maintenance of a suitable temperature throughout the voyage, are all desiderata which are absolutely indispensable.

Our exporters have found that the wrapping of the individual fruits in tough greased or oiled paper is a valuable safeguard against the moisture from the inevitable "rotter" which escapes the packer's scrutiny being communicated to the adjoining fruits in the case.

THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF JANUARY.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

Booborowie.—Weather—Generally speaking, January was exceedingly cold, with one exceptionally hot day on the 23rd; 26 points of rain registered for the month. South winds have been very prevalent. Crops—The lucerne crops have been growing very well, but they are rather short, with a tendency to flower very quickly. Natural feed is fairly plentiful. Stock are all in good condition. Pests—There are no pests worth mentioning, excepting the saffron-thistle. Miscellaneous—Farmers have finished harvesting; a long and tedious task owing to continuous unfavorable weather.

Kybybolite.—Weather has been far from summery, only two really hot days being noted, and on quite 20 days cool winds from the south or west have been recorded. Light showers have been received, registering in all 39 points, which is approximately equal to the average for the past 18 years. Strong winds have been frequent, much more so than usual. Crops—Harvesting of cereals is completed, with the exception of some thrashing. The sample of grain received is very good, but yields are not quite up to expectations. Summer forage crops have naturally kept growing, and are providing good forage for cows. Turnip crops have developed well. Maize for grain under irrigation has not developed too well, conditions being too cool. Winds have caused loss of a lot of fruit, but the crop of stone fruits has been generally heavy. Natural feed is plentiful, there being a strong growth of wireweed in most stubbles. Ragwort is also fairly thick. Stock are all in very good health. Milch cows have kept up well with their milk supply.

Turretfield.—Weather—This has been a remarkably cool and damp month; light rains have been registered on seven days. Crops—The crops are practically all harvested, only a few farmers having some hay still in the stooks. The yield is below the average for this district. Stock is in fair condition, and is now running on the stubbles. Pests—Starlings are beginning to give trouble in the gardens. Miscellaneous—A new fruit-drying plant erected at Lyndoch has been a great convenience to the gardeners in the neighborhood.

Veitch.—Weather—Have experienced a very dry month, only having had 4 points of rain for month—Veitch average, 40 points for January. Have had a good deal of heavy winds, mostly from the west. Crops—Cereals are all harvested, and in many cases did not yield as high as expected. Natural Feed—Enough to keep stock going with help of stubble feed. Stock—All in healthy condition. Pests—Nothing troublesome. Miscellaneous—Fallow land has drifted rather badly this year, and where near roads has made the traffic heavy.

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Ltd., reported on Friday, February 2nd, 1923:—

BUTTER.—The season has been an unusually lengthy one, but supplies of top grades are now showing a falling off, and it will not be long before importations will be necessary to cope with the local demand. The London market has considerably improved in values during the month, and it has had the effect of firming prices so that satisfactory values have been realised. The weather has been very favorable for the making and marketing of butter, and this has all been helpful in maintaining the quality. At the close of the month choicest factory and creamery fresh butter in bulk sold at 1s. 7¼d.; prints, ¾d. extra; second-grade factory and creamery, 1s. 3½d.; third grade, 1s. 2½d.; best separators and dairies, 1s. 4½d. to 1s. 6½d.; fair quality, 1s. 2d. to 1s. 4d.; well-conditioned store and collectors', 1s. to 1s. 1½d.

EGGS.—Supplies have kept up remarkably well, the cool weather assisting in this direction. Good local demand has been experienced, but there has been an absence of export, so that supplies coming forward have been quite equal to local requirements. Values during the month firmed 1d. per dozen, fresh hen selling at 11d.; duck, 1s.

CHEESE.—This line shows a marked improvement in price, owing to the keen buying orders being placed on this market from London, heavy quantities being placed at the improved rate, present values being 10d. to 11d. for large to loaf.

HONEY.—Quantities coming forward have shown a marked increase, but it is pleasing to report that all lines of prime clear extracted have met with ready sale at 3½d. to 3¾d., but second grades are very slow of sale at 2d. per lb.

ALMONDS.—Most of last season's have been exhausted, and as the crop this season is a late one, buyers are asking for quotations. Present prices ruling are:—Brandis, 1s.; mixed softshells, 11d.; hardshells, 5½d.; kernels, 1s. 6d. to 1s. 7d.

BACON.—The curers have had a busy time owing to the active demand that has ruled, and during the early part of the month buyers found difficulty in obtaining anything like their wants, but as supplies increased considerably during the latter part, the offerings were quite equal to requirements. Best factory-cured sides, 1s. 1d. to 1s. 1½d.; hams, 1s. 6d.; middles, 1s. 3d.; rolls, 11½d. to 1s.; lard in packets, 8d.; in bulk, 7d. to 7½d.

LIVE POULTRY.—During the early part of the month catalogues were very light. This is usual after Christmas sales, but during the month quantities increased, and good-sized catalogues were submitted. Buyers throughout the month have been keen in their operations, and good clearances have been effected, prices maintaining well. Farmers would be wise in sending on any surplus poultry they have, so as to secure the good figures now being obtained. Crates obtainable on application. Prime roosters (heavy weights), 5s. 3d. to 7s. 9d. each; nice conditioned cockerels, 4s. to 5s. 2d.; plump hens, 3s. 10d. to 5s. 6d.; medium hens, 2s. 3d. to 3s. 6d.; some pens of weedy sorts lower; geese, 4s. 6d. to 5s. 6d.; ducks, good quality, 5s. to 7s. 9d.; ducks, fair condition, 2s. 6d. to 3s. 6d.; turkeys, prime quality, 1s. 6d. per lb. to 2s. per lb. live weight; turkeys, fair condition, 1s. per lb. to 1s. 5d. per lb. live weight; fattening sorts lower; pigeons, 7d. and 8d. each

POTATOES.—Since our last report, market has eased very considerably owing to the heavy supplies offered from Victoria, whilst local grown have been marketed more freely. Quotations:—Prime Victorians, from 8s. to 10s. on trucks Mile End.

ONIONS.—Values for these have also come back, quotations at the close of the month being from 10s. to 11s. per cwt.; heavy supplies offering.

MARE WITH TRIPLETS.

The unusual occurrence of a mare giving birth to three foals within a period of two days is reported by Mr. D. S. Adamson, of Hart, South Australia, who in the course of a communication to the Editor states:—"The mare had been working on the cultivator team (10 horses) during the seeding (about five weeks), and was noticed to fag and be a bit off color, so was left out of the team and turned out for a few days. On Thursday, June 22nd, at about 4 o'clock, the animal was noticed to be lying down. It then got up and dropped a foal, nearly fully developed, but dead. Later on, the animal was brought into the stable, and appeared to be none the worse for the affair. On the morning of the 23rd the mare was noticed to smell very strongly of decayed matter, and at about 5 p.m. was again brought into the stables, and was noticed to be very sickly. At 8 o'clock the mare was found with another foal in the same condition as the first. Half an hour later the mare was up and feeding as though nothing had happened. On going to feed up early in the morning of the 24th I found the mare with another dead foal, and in the same condition as the other two, and the mare very sickly on it. During the morning I gave the mare a good strong douche of Condy's in warm water, and in a few days the mare was almost as well as ever, and since has done about two weeks to three weeks' fallowing. All the three foals were about three-quarters grown, and I should say had been dead about a week before being dropped. They were all from the same mare, as the animal was in a stable alone on the night of the 23rd and morning of 24th, and was observed to have dropped the foal in the paddock on the 22nd."

The Government Veterinary Surgeon (Mr. C. A. Loxton, B.V.Sc.) mentions, by way of comment, that it is rare for triplets to be recorded in the mare. The occurrence is generally regarded as being due to successive fecundations, and is usually followed by premature birth, about the eighth to tenth month, the foals being born dead, or dying soon after birth. Should any of them survive they are weaklings.

HARVESTING BERSEEM SEED.

In response to an inquiry, Messrs. H. W. Morphett & Co., of Woods Point, have kindly supplied the following information with respect to the method adopted by that firm in harvesting Berseem seed:—"As the seed shakes out easily, when the majority of heads were well into the dough stage, we mowed the crop with an ordinary mower, raked it up, and cocked it at once. It is necessary to do this and all subsequent operations up to threshing on cool, damp days, otherwise a lot of seed will be lost. We allowed about 15 days to 20 days in the cocks. By this time the stems were dry enough to stack. We then stacked the whole lot and thrashed it out with an ordinary thrasher some time later when labor was available. We winnowed the result from the thrasher, and finished the seed by hand sieving. A trouble we encountered was a great quantity of small particles of earth about the same size as the seed. We were unable to remove this, but had no difficulty in selling the seed by making some allowance for the dirt contained."

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of January, 1923, also the average precipitation to the end of January, and the average annual rainfall.

Station.	For Jan., 1923	Av'ge. to end Jan.	Av'ge. Annual Rainfall
Far North and Upper North.			
Oodnadatta	—	0·71	4·93
Marree	0·06	0·46	6·14
Farina	0·30	0·57	6·73
Copley	0·02	0·67	8·50
Beltana	0·05	0·72	9·05
Blinman	0·08	1·03	12·61
Tarcoola	—	0·39	7·91
Hookina	—	0·70	13·60
Hawker	0·06	0·66	12·93
Wilson	—	0·71	12·56
Gordon	0·09	0·75	11·60
Quorn	0·21	0·73	14·24
Port Augusta	0·03	0·57	9·68
Port Augusta West	0·05	0·56	9·74
Bruce	—	0·53	10·76
Hammond	0·09	0·68	11·90
Wilmington	0·03	0·90	18·44
Willowie	0·10	0·54	12·44
Melrose	0·21	1·26	23·88
Booleroo Centre	0·05	0·83	15·67
Port Germein	0·09	0·69	12·93
Wirrabara	0·03	0·71	19·85
Appila	0·71	0·65	15·01
Cradock	0·40	0·66	11·50
Carrieton	0·09	0·85	12·91
Johnburg	0·08	0·63	10·85
Eurelia	0·09	0·83	13·56
Orroroo	0·16	1·05	13·75
Nackara	0·08	0·77	11·85
Black Rock	0·85	0·74	12·73
Ucolta	—	0·78	12·10
Peterborough	0·60	0·84	13·53
Yongala	0·39	0.67	14·51
Lower North-East.			
Yunta	—	0·72	8·93
Waukaringa	—	0·58	8·61
Mannahill	0·04	0·74	8·79
Cockburn	0·07	0·68	8·42
Broken Hill, N.S.W.	0·13	0·72	10·08
Lower North.			
Port Pirie	0·34	0·65	13·55
Port Broughton	0·35	0·62	14·27
Bute	0·01	0·62	15·80
Laura	0·41	0·71	18·25
Caltowie	0·52	0·69	17 19
Jamestown	0·68	0·66	17·86
Bundaleer W.Wks.	0·41	0·68	18·05
Gladstone	0·60	0·66	16·22
Crystal Brook	0·20	0·67	15·93
Georgetown	0·16	0·67	18·50
Narridy	0·23	0·59	16·43
Redhill	0·76	0·58	16·93
Lower North—*continued*.			
Spalding	0·53	0·59	20·41
Gulnare	0·47	0·64	19·34
Yacka	0·23	0·51	15·45
Koolunga	0·30	0·60	15·87
Snowtown	0·18	0·62	16·05
Brinkworth	0·65	0·48	16·26
Blyth	0·18	0·68	16·96
Clare	0·63	0·85	24·60
Mintaro	0·34	0·56	23·40
Watervale	0·40	0·88	27·44
Auburn	0·31	0·98	24·30
Hoyleton	0·10	0·76	17·85
Balaklava	0·23	0·71	15·91
Port Wakefield	0 13	0·58	13·29
Terowie	0·04	0·72	13·78
Yarcowie	0·14	0·72	14·18
Hallett	0·19	0·71	16·47
Mount Bryan	0·12	0·50	16·74
Kooringa	0·39	0·76	18·06
Farrell's Flat	0·20	0·73	18·97
West of Murray Range.			
Manoora	0·27	0·56	18·78
Saddleworth	0·41	0·74	19·74
Marrabel	0·66	0·71	19·67
Riverton	0·31	0·78	20·71
Tarlee	0·43	0·77	17·81
Stockport	0·35	0·78	16·49
Hamley Bridge	0:36	0·81	16·52
Kapunda	0·41	0·85	19·85
Freeling	0·47	0·76	17·90
Greenock	0·61	0·77	21·60
Truro	0·36	0·72	20·80
Stockwell	0·31	0·72	20·31
Nuriootpa	0·34	0·78	20·99
Angaston	0·25	0·76	22·48
Tanunda	0·19	0·83	22·20
Lyndoch	0·23	0·74	22·88
Williamstown	0·25	0·88	27·47
Adelaide Plains.			
Mallala	0·28	0·74	16·66
Roseworthy	0·32	0·74	17·29
Gawler	0·37	0·72	19·09
Two Wells	0·26	0·70	15·83
Virginia	0·45	0·71	17·31
Smithfield	0·37	0·51	17·16
Salisbury	0·84	0·72	18·45
North Adelaide	0·68	0·75	22·22
Adelaide	0·71	0·72	20·05
Glenelg	0·61	0·61	18·37
Brighton	0·59	0·62	21·34
Mitcham	0·77	0·82	24·06
Glen Osmond	0·90	0·94	25·78
Magill	0·86	0·80	25·24

RAINFALL—*continued.*

Station.	For Jan., 1923.	Av'ge. to end Jan.	Av'ge. Annual Rainfall
Mount Lofty Ranges.			
Teatree Gully	0·93	0·77	27·65
Stirling West	1·22	1·42	46·59
Uraidla	0·94	1·23	43·92
Clarendon	0·57	1·09	32·98
Morphett Vale	0·51	0·78	22·79
Noarlunga	0·48	0·62	20·35
Willunga	0·30	0·73	25·89
Aldinga	0·35	0·53	20·35
Myponga	0·94	0·49	29·16
Normanville	0·48	0·54	20·61
Yankalilla	0·57	0·51	23·10
Mount Pleasant	0·36	0·83	27·16
Birdwood	0·41	1·05	29·33
Gumeracha	0·76	1·05	33·29
Millbrook Reservoir	0·95	—	—
Tweedvale	0·52	0·98	35·55
Woodside	0·52	0·94	32·11
Ambleside	0·41	1·01	34·67
Nairne	0·32	0·92	28·42
Mount Barker	0·56	1·00	31·18
Echunga	0·51	1·03	32·96
Macclesfield	0·44	0·85	30·57
Meadows	0·60	0·97	36·04
Strathalbyn	0·22	0·68	19·32
Murray Flats and Valley.			
Meningie	0·45	0·64	18·66
Milang	0·26	0·64	15·40
Langhorne's Creek	0·25	0·44	14·61
Wellington	0·42	0·75	14·77
Tailem Bend	0·36	0·46	14·55
Murray Bridge	0·18	0·59	13·93
Callington	0·15	0·69	15·42
Mannum	0·05	0·52	11·64
Palmer	—	0·47	15·47
Sedan	—	0·54	12·29
Swan Reach	0·09	0·36	11·09
Blanchetown	—	0·52	10·16
Eudunda	0·78	0·70	17·54
Sutherlands	0·15	0·35	11·19
Morgan	0·20	0·50	9·30
Waikerie	—	0·30	9·91
Overland Corner	—	0·50	11·07
Loxton	0·21	0·47	12·63
Renmark	0·02	0·49	11·09
West of Spencer's Gulf.			
Eucla	0·69	0·59	10·02
White Well	0·13	0·48	9·08
Fowler's Bay	0·80	0·38	12·16
Penong	0·05	0·31	12·49
Ceduna	0·27	0·24	10·36
Smoky Bay	0·42	0·78	—
Petina	0·27	0·32	13·34
Streaky Bay	0·52	0·43	15·10
Talia	0·25	0·26	15·46
Port Elliston	0·26	0·38	16·55
Cummins	0·25	0·44	18·90
West of Spencer's Gulf—*continued.*			
Port Lincoln	0·25	0·58	19·72
Tumby	0·39	0·28	14·76
Carrow	0·22	0·42	14·80
Arno Bay	0·48	0·32	13·30
Cowell	0·27	0·46	11·75
Minnipa	—	—	—
Yorke Peninsula.			
Wallaroo	—	—	14·18
Kadina	—	—	16·05
Moonta	0·30	0·52	15·38
Green's Plains	0·18	0·52	18·89
Maitland	0·48	0·58	20·15
Ardrossan	0·55	0·50	14·11
Port Victoria	0·64	0·46	15·47
Curramulka	0·47	0·57	18·22
Minlaton	0·42	0·49	17·91
Brentwood	0 26	0·34	15·83
Stansbury	0·47	0·59	17·04
Warooka	0·49	0·43	17·81
Yorketown	0·33	0·47	17·26
Edithburgh	0·51	0·51	16·58
South and South-East.			
Cape Borda	0·48	0·61	25·10
Kingscote	0·18	0·45	19·10
Penneshaw	0·29	0·46	19·39
Victor Harbor	0·37	0·71	21·45
Port Elliot	0·50	0·66	20·26
Goolwa	0·35	0·65	17·87
Meribah	—	—	—
Mindarie	0·12	—	—
Karoonda	0·06	—	—
Pinnaroo	0·19	0·40	15·66
Parilla	0·10	0·41	14·65
Lameroo	0·30	0·51	16·37
Parrakie	0·32	0·36	14·54
Geranium	0·50	0·39	16·19
Peake	0·47	0·55	16·58
Cooke's Plains	0·44	0·54	15·04
Coomandook	0·44	0·49	17·48
Coonalpyn	0·67	0·61	17·42
Tintinara	0·39	0·51	18·60
Keith	0·54	0·37	18·17
Bordertown	0·26	0·76	19·44
Wolseley	0·31	0·61	18·12
Frances	0·35	0·68	19·78
Naracoorte	0·41	0·80	22·52
Penola	0·74	1·03	26·29
Lucindale	0·52	0·70	22·95
Kingston	0·83	0·71	24·47
Robe	0·87	0·76	24·59
Beachport	0·44	0·86	20·24
Millicent	0·95	0·95	29·36
Kalangadoo	1·09	—	—
Mount Gambier	0·83	1·37	31·24

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings.	
		Feb.	Mar.
Alawoona	*	—	—
Aldinga	*	—	—
Amyton	*	6	5
Angaston	*	—	—
Appila-Yarrowie	*	—	—
Arthurton	*	—	—
Ashbourne	*	—	—
Balaklava	*	10	10
Balhannah	670	2	2
Barmera	664	27	27
Beetaloo Valley	*	—	—
Belalie North	*	—	3, 31
Berri	*	28	—
Big Swamp	*	—	—
Blackheath	674	—	3, 31
Black Springs	657	—	—
Blackwood	*	19	19
Block E	*	—	—
Blyth	656	3	3
Booleroo Centre	*	2	2, 30
Borrika	*	—	—
Bowhill	*	—	—
Brentwood	*	1	1, 29
Brinkley	*	—	3, 31
Bundaleer Springs	*	—	—
Burra	*	—	—
Bute	*	27	27
Butler	*	—	—
Cadell	*	—	—
Canowie Belt	*	—	—
Carrow	*	1	1, 29
Cherry Gardens	683	27	27
Clanfield	*	—	—
Clare	657	2	2
Clarendon	*	26	26
Claypan Bore	*	28	—
Cleve	*	28	28
Collie	663	R	—
Colton	*	23	23
Coomandook	*	28	28
Coonalpyn	*	2	2, 30
Coorabie	*	—	—
Cradock	*	—	—
Crystal Brook	*	—	3, 31
Currency Creek	674, 6	—	—
Cygnet River	*	—	1, 29
Dawson	*	—	—
Denial Bay	*	—	—
Edillilie	*	24	31
Elbow Hill	*	6	6
Eurelia	*	—	—
Farrell's Flat	*	—	—
Frances	F	24	31
Gawler River	*	—	1

Branch.	Report on Page	Dates of Meetings.	
		Feb.	Mar.
Georgetown	*	—	3, 31
Geranium	*	24	31
Gladstone	*	—	—
Glencoe	*	—	—
Glossop	664	28	28
Goode	*	28	—
Green Patch	*	26	26
Gumeracha	*	6	5
Halidon	*	—	—
Hartley	*	28	28
Hawker	*	—	6
Hilltown	*	—	—
Hookina	654	1	1, 29
Inman Valley	*	—	—
Ironbank	*	—	3, 31
Kadina	*	—	—
Kalangadoo	F	10	10
Kangarilla	684	—	—
Kanmantoo	*	—	3
Keith	*	—	—
Ki Ki	*	—	—
Kilkerran	*	27	—
Kimba	*	—	—
Kingscote	*	—	—
Kingston-on-Murray.	*	—	—
Kongorong	‡	1	1, 29
Koonibba	*	2	2, 30
Koppio	*	26	26
Kybybolite	*	R	1, 29
Lake Wangary	662	—	3, 31
Lameroo	*	2	2, 30
Laura	*	2	3, 31
Leighton	*	—	—
Lenswood and Forest Range	*	—	—
Lipson	662	—	—
Lone Gum and Monash	‡	28	28
Lone Pine	*	—	—
Longwood	678, 679	—	—
Loxton	*	—	—
Lucindale	*	—	—
Lyndoch	*	—	—
McLachlan	663	—	3
Maitland	*	1	1, 29
Mallala	660	19	19
Maltee	*	2	2, 30
Mangalo	*	—	—
Marama	*	R	—
Meadows	684	28	28
Meningie	*	—	—
Milang	*	10	10
Millicent	*	3	3
Miltalie	*	—	3, 31

INDEX TO AGRICULTURAL BUREAU REPORTS—*continued.*

Branch.	Report on Page	Dates of Meetings.	
		Feb.	Mar.
Mindarie	*	5	5
Minlaton	*	2	2, 30
Minnipa	*	28	28
Monarto South	*	—	—
Moonta	*	R	2, 30
Moorak	*	1	1, 29
Moorlands	*	—	—
Moorook	*	—	—
Morchard	*	—	3, 31
Morgan	*	—	—
Morphett Vale	*	1	1, 29
Mount Barker	679	28	28
Mount Bryan	*	—	—
Mount Byran East	*	—	—
Mount Compass	*	—	—
Mount Gambier	‡	10	10
Mount Hope	*	—	3, 31
Mount Pleasant	684	—	—
Mount Remarkable	*	—	—
Mundalla	*	—	—
Murray Bridge	*	—	—
Mypolonga	*	28	28
Myponga	*	—	—
Nantawarra	661	1	1, 29
Naracoorte	*	10	10
Narridy	656	3	3, 31
Narrung	*	3	3, 31
Neeta	*	—	—
Nelshaby	*	—	3, 31
Netherton	*	—	—
North Booborowie	*	—	—
North Bundaleer	*	—	—
Northfield	*	—	—
Nunkeri and Yurgo	*	4	4
O'Loughlin	*	28	28
Orroroo	*	—	—
Owen	661	2	2, 30
Parilla	*	—	—
Parilla Well	*	5	5
Parrakie	*	—	—
Paruna	*	—	—
Paskeville	*	2	2, 30
Pata	*	—	—
Penola	*	3	3
Petina	*	24	31
Pinnaroo	*	2	2, 30
Pompoota	*	14	14
Port Broughton	*	2	2, 30
Port Elliot	*	17	17
Port Germein	*	3	3
Pygery	*	—	—
Ramco	*	26	26
Rapid Bay	680-1	3	3
Redhill	*	—	—
Rendelsham	*	28	28
Renmark	665-8	1	1, 29
Riverton	*	—	—
Riverton (Women's)	*	—	—
Roberts and Verran	*	26	26
Rockwood	682	26	26
Rosedale	*	—	—
Rosy Pine	*	—	—
Saddleworth	*	—	—
Saddleworth (Women's)	*	—	—
Salisbury	*	6	6
Salt Creek	*	—	—
Sandalwood	*	—	—
Shoal Bay	*	—	—
Smoky Bay	*	—	—
Spalding	*	—	—
Stockport	*	—	—
Streaky Bay	663	—	—
Strathalbyn	*	27	27
Talia	*	R	12
Tantanoola	*	—	3, 31
Taplan	*	3	3
Tarcowie	*	27	27
Tarlee	*	—	—
Tatiara	*	17	17
Two Wells	*	—	—
Uraidla & Summertown	*	5	5
Veitch	*	—	—
Virginia	*	—	—
Waikerie	*	—	—
Wall	*	—	—
Wanbi	*	—	—
Warcowie	*	—	—
Watervale	*	—	—
Weavers	*	26	26
Whyte-Yarcowie	*	—	—
Wilkawatt	*	R	3, 31
Williamstown (Women's)	661	7	7
Williamstown	661	—	—
Willowie	*	28	28
Wilmington	*	28	28
Windsor	*	—	—
Winkie	*	—	—
Wirrabara	654	10	10
Wirrega	*	—	—
Wirrilla	*	—	3, 31
Wolowa	*	—	—
Wudinna	*	—	—
Wynarka	*	—	—
Yabmana	*	—	—
Yacka	656	27	27
Yadnarie	*	27	27
Yallunda	*	—	—
Yaninee	*	—	—
Yeelanna	*	—	3, 31
Yongala Vale	*	—	—
Yorketown	*	—	—
Younghusband	670	1	1, 29

* No report received during the month of January.
R In recess.
‡ Held over until next month.
F Formal.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

HOOKINA (Average annual rainfall, 12in.).

December 28th.—Present: 10 members and visitors.

Sidelines on the Farm.—Mr. P. B. Henschke, who read a paper on this subject, said more than one sideline could be run profitably by the farmer in that district, as the holdings were fairly large, and in no case was the whole of the farm fit for cultivation. The best line he considered to be sheep, because they involved, perhaps, the least trouble and showed a good return. The sheep best suited for that district was the Merino. Another good sideline, especially where the farmer had plenty of labor, was dairying. There was always a good market for the cream, and a great deal of work was saved which had to be gone through if one made butter. In conjunction with dairying, pig raising could be carried on, which at prices that had been ruling for the last few years should be profitable. The pigs would require very little wheat except to top them off before marketing. In opening the discussion, Messrs. M. Hentschke, J. O'Connor, and F. Cagney considered sheep the best sideline. Messrs. H. V. Henschke, S. Stone, and B. A. Murphy agreed with the previous speakers. These members considered that if one had a large area of rough land sheep should be kept, but if the farmer had plenty of help and only a small holding cows should be kept as a sideline to work in conjunction with wheat. Mr. Murphy said that if a couple of good breeding sows were kept they would turn in a very fair profit. Too many sidelines did not pay, because they could not be given proper attention. Each man should keep to the line he preferred. Unless properly attended to no sideline would give good results.

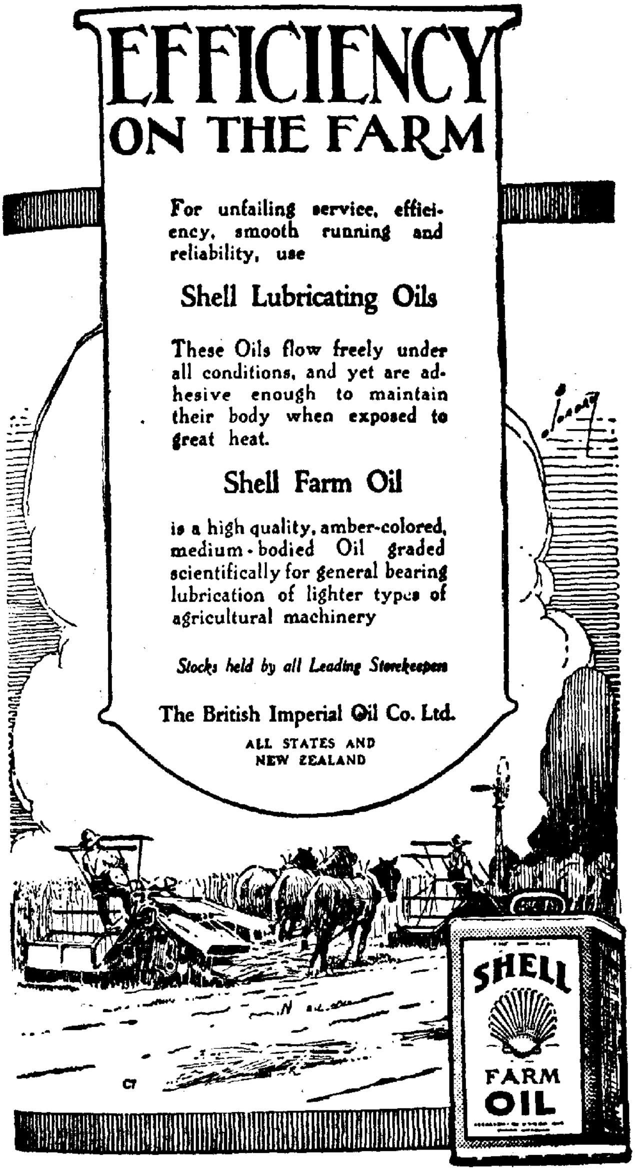
MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

WIRRABARA (Average annual rainfall, 18.91in.).

December 2nd.—Present: 19 members and visitors.

The House Fly.—In the course of a paper on this subject, Mr. A. R. Morcom first gave an interesting description of the life cycle of the house fly. The paper then read as follows:—The favorite breeding place of flies is in manures of all descriptions, but any animal or vegetable matter is also used. It is customary for the manure from the stables to be thrown in heaps until sufficient accumulates to make carting worth while, or until a slack time presents itself, and it is in these manure heaps that flies breed. To prevent this, kerosine should be sprayed over the heap. This will keep away the fly and destroy those in an immature stage already in the manure. The fly being such a source of torment to horses, the owner should see that all winkers are fitted during the fly season with veils, and the practice of docking horses' tails should be disallowed in any centre where flies are prevalent. At the house precautions against the fly become somewhat easier, and if taken they will lead to its destruction. Floors of all places where food is prepared should be scrubbed with a little kerosine in the water. The practice of throwing out water from wash bowls, &c., and water



EFFICIENCY
ON THE FARM

For unfailing service, efficiency, smooth running and reliability, use

Shell Lubricating Oils

These Oils flow freely under all conditions, and yet are adhesive enough to maintain their body when exposed to great heat.

Shell Farm Oil

is a high quality, amber-colored, medium-bodied Oil graded scientifically for general bearing lubrication of lighter types of agricultural machinery

Stocks held by all Leading Storekeepers

The British Imperial Oil Co. Ltd.
ALL STATES AND
NEW ZEALAND

in which meat or vegetables have been boiled, should be discontinued. A hole should be dug into which this water should be emptied, and the hole securely covered with a screen, and if the ground around the screen and hole is occasionally sprayed with kerosine the flies will be prevented from breeding. If the kitchen is provided with a sink it should receive the same attention. All food must be protected from flies to prevent contamination. All tables should be kept clean, and cooking and eating utensils, except when in actual use, should be covered with hanging curtains if on shelves or hooks, and by doors if in cupboards. Windows should be fitted with wire screens, and outer doors with wire doors, but if these are not available an effective substitute for screens can be made by using a piece of cheesecloth. Doors provided with hanging curtains prove barriers which few flies pass. All rooms where food is stored should be kept as dark as possible, as this tends to keep out flies. The use of flypapers, fly powder, and fly traps is advocated, and all birds that are seen feeding on flies should be encouraged to remain near the house.

YACKA.

November 10th.—Present: 20 members.

"SHEEP ON THE FARM."—In the course of a paper dealing with this subject, Mr. A. Martin suggested that the farmer with a moderate-sized holding should keep a flock of strong constitutioned Merino sheep. The selection of the breeding ewes should be made from a reputed breeder of high-class sheep, and, if possible, the purchase should be made from a district with similar climatic conditions to those which prevailed at the farmer's holding. He considered that a fairly strong-woolled ram, without too many wrinkles and a clean face, should be chosen for the head of the flock. Regarding the treatment of the sheep, the speaker made a strong point of the necessity for crutching, particularly the breeding ewes. That work, he thought, should be performed a few weeks before the ewes lambed. Mr. Martin also tabled samples of various types of wool, and explained the quality and value of each type. In the discussion that followed, Mr. Richards advised, when tailing, cutting the tail right off, in order to minimise the blowfly nuisance. He also emphasised the necessity for crutching the ewes twice a year. Mr. McCallum considered that as a sideline sheep were essential on the farm, and helped to clean up the fallow. He did not think it necessary to cut the tail right off when breeding sheep for market, as a good tail assisted to show off a fat sheep. Mr. T. J. Harvey strongly advised farmers to avoid sheep with wrinkles around the tail, because the wrinkles provided a harbor for the blowfly. He also advised growers when short of feed to hand feed the sheep on ½lb. to 1lb. of oats daily, especially with early lambs in April and May. Mr. Rundle advised hand feeding sheep, and giving them plenty of salt, to avoid losses on account of stinkwort poisoning. For lamb raising a Dorset Horn ram mated with a Merino ewe should be used, and the farmer should strive to keep to the one type when breeding sheep for wool.

BLYTH, November 14th.—INSURANCE.—To an audience of 18 members and two visitors Mr. D. O'Connell read a paper entitled, "Does it Pay Farmers to go in for Insurance?" The writer of the paper dealt with the development of insurance, and detailed the risks that companies were at present prepared to cover. The advantages of a life cover for the farmer, the wisdom of insuring houses, sheds, fences, crops, and stock were discussed, as also was the need for protection against claims under the provisions of the Workmen's Compensation Act. An interesting discussion followed, and the writer of the paper was heartily commended.

NARRIDY, November 4th.—Mr. Richards read a paper, "Most Useful Horse for Farm Work." The paper was well discussed, the majority of members expressing a preference for the heavy type of Clydesdale. Mr. Pascoe also read an extract, "Locusts," and an interesting discussion followed.

LOWER-NORTH DISTRICT.

(ADELAIDE TO FARRELL'S FLAT.)

BLACK SPRINGS.

December 5th.—Present: 15 members.

Hay and Haymaking.—Mr. E. F. Siegert, who contributed a paper on this subject, first referred to the wheats most suitable for hay. Of these the speaker expressed a preference for Zealand Blue. The feeding value of the hay would be increased if oats were added. To do that he suggested that the wheat should be sown early, and Calcutta oats sown a fortnight later. If both the cereals were sown at the same time there was a danger of the oats choking out the wheat. The crop should be cut somewhat on the green side, and allowed to remain in the field four days before being stooked. It should then be ready for stacking after being cut eight days. He suggested a stack 12ft. wide, with round corners, and roofed with the heads of the sheaves facing outwards.

CLARE (Average annual rainfall, 24.30in.).

December 1st.—Present: 15 members.

Drying of Fruit.—Mr. H. W. Lawrence read the following paper:—"Fruit-drying with the aid of the sun is undoubtedly the best and most economical. In most cases artificial means are only resorted to when weather conditions are such that loss of fruit is feared. Fortunately conditions are so favorable in Australia that practically the whole of our fruit is sun dried. Thus Nature assists us very much in the production of a first-class article. The drying ground should be located at a spot as free as possible from dust, away from roadways and cultivated land. Nothing looks worse than a dirty, gritty sample of dried fruit. Lucerne makes a good cover for the drying ground, where it can be successfully grown.

Farmers and Others

HAVE YOU MADE YOUR WILL?

If you contemplate making your will, or altering your present will, call on us or write to us, when we shall be pleased to furnish you with such information as you may desire as regards our Administration of Trust Estates, and give you the benefit of our advice and experience without charge.

CONFIDENCE AND SATISFACTION.

There is no better evidence that Bagot's Executor and Trustee Company Limited is giving satisfaction in the administration of Trust Estates than the fact that a large number of beneficiaries in such estates have appointed the Company Executor of their own Wills. This practical expression of confidence in the Company has occurred in over fifty per cent. of the Estates Administered by the Company since its incorporation.

Bagot's Executor and Trustee Coy. Ltd.

22, King William Street, Adelaide.

Frank Blamey, F.F.I.A., Manager.

The drying plant consists of racks of various designs, constructed of wire netting for currants and raisins, and wooden trays of either laths or matchboard for fruit, also dipping tanks, sulphur boxes, &c. The rack is undoubtedly the best, both as a labor saver and for the production of a superior sample of fruit. However, it is always advisable to have a supply of wooden trays on hand in case of emergency. Those constructed of 1½in. laths are to be preferred, because they allow a better circulation of air around the fruit. The type of rack that gives general satisfaction is that made of 2in. mesh wire netting, 4ft. wide. The single rack is preferable, as it allows the fruit to dry more evenly and more quickly than a double one. This is made any length up to 100ft., and 9ft. high, roofed with iron. Posts should not be more than 9ft. apart, with a good anchor at each end from which to strain. The netting is threaded on either side and in the centre with No. 8 wire. This adds greatly to the strength and life of the rack. Netting should be spaced about 8in. or 9in. apart to allow a good circulation of air. Each tray should be movable. They should all be run up to the top of the rack before spreading operations begin, being let down one at a time and filled. This gives more room for working, and allows the fruit to be spread evenly right out of the picking tins with very little extra handling. The rack should be constructed running north and south to ensure a more even drying of the fruit. The currant is the simplest of all fruits to dry; the berries, being small and thin skinned, allow the moisture to evaporate quickly. Should the crop be heavy and foliage thick, a thinning of the leaves soon after the fruit starts to color will materially assist the ripening process, but care must be taken not to expose the bunches too much, otherwise more harm than good will result. Picking operations should not be started until the fruit is a nice black color, showing a Beaume test of from 13deg. to 14deg. Care should be taken in handling from the vine to the rack or trays. Damaged fruit causes a stickiness, which means loss of weight; it also increases the drying period and spoils the appearance of the fruit when packed. The bunches should be spread evenly, and if put on trays during very hot weather, left stacked, or much weight and color are lost. About three weeks of good weather and the fruit will be ready to rub down off the racks. This is done with a piece of flat board about 4in. wide and 2ft. long. Should there be a large percentage of bucks it is advisable to rub through a ⅜in. mesh wire sieve, and again spread the bucks on trays to finish off, whilst currants are boxed up ready for cleaning and grading, and allowed to sweat for a short time. The ordinary raisins, better known as lexias, are made from the Gordo Blanco Muscat, whilst a few are also made from the Malaga or Waltham Cross. The fruit should be left till perfectly ripe before it is picked to obtain as much sugar content as possible. The fruit is dipped in boiling lye, made up of 1lb. of caustic soda to 10 gallons of water. Should the berries be tough in the skin, as is sometimes the case, through being too much exposed to the sun during ripening, a little stronger dip will be required. Fruit should be dipped from four to six seconds, care being taken thoroughly to immerse the whole of it. The lye should be about 190deg. to 200deg. Fahr. If large quantities are to be dealt with a little caustic must be added now and then to keep up the strength of the dip. Should the bunches be large they will require to be cut into pieces and allowed to drain well before being spread. The best results are obtained if dipping is done during hot weather only, because the shorter the drying period the better the sample. Unless nights are dry, dipping operations should cease early in the afternoon. If spread on trays, the fruit must be turned every day to ensure even drying. Sultanas require almost the same treatment as Gordos, except that the dip can be slightly weaker—1lb. caustic to 12galls., also temperature from 175deg. to 180deg. Fahr. When dry the fruit should be put straight through the stemmer and grader. If allowed to sweat the stems become tough and do not clean well. Table raisins are made from the same variety as lexias, viz., Gordo Blanco, but they are not dipped. Only the very best bunches and fruit are selected for this type of product. In consequence, only a small proportion of the crop is suitable for drying into table fruit. Unless the weather is good it is useless to attempt this class of drying. Bunches should be cut with as long a stem as possible, so that the fruit will not be touched by hand. If the weather is very hot, the fruit must not be put straight out off the vine, but allowed to wilt for a day or so. Unlike other raisins, these only require turning about once a week. When dry they are put in small boxes to sweat, which toughens the stalk, and they are then ready to pack. To obtain a first quality sample of dried apricots and peaches the fruit should be quite ripe but firm when gathered, several pickings being necessary to obtain best results. In apricots, the Moorpark is the principal variety grown, peaches being Elberta, Early Crawford, and Sea Eagle. The last named is white fleshed, and if well dried looks very attractive when packed. Both apricots and peaches require about the same treatment. If stored for a day or two after picking they will dry much better. Care should be taken when cutting to sever the fruit right around with a sharp knife. If torn open it spoils the appearance when dry. The fruit should be placed on trays, cups uppermost, and put into the sulphur box as soon as possible. The quantity of sulphur varies according to the weather. If it is very hot, less can be used with just as good results. About 1½lbs. to every 100 cub. ft. of air space is sufficient. If the weather is cool, 2lbs. to 2½lbs. must be used. The fruit should be sulphured from 8 hours to 12 hours. The hotter the weather the more effective the sulphur is. When taken out of the kiln the cups are full of juice if well treated, and may be spread straight out in the hot sun without any ill effects. The shorter the drying period the better is the color obtained. Fruit should not be over-dried; that spoils the appearance and results in loss of weight. If put in large boxes to sweat, a few soft pieces will be readily absorbed, and be much better for packing. Any plum that is rich in sugar may be dried, except those of the Jap variety; these are only used for dessert and jam-making purposes. Those most in favor as a prune are D'Agen, Splendour, and Sugar. Angelina Burdett dries well, and has the advantage of ripening early; thus it is worth a place in the garden. Of light varieties Coe's Golden Drop and Jefferson are the best, but these are not so extensively grown. To produce a good prune or dried plum, the fruit should be left to hang on the trees till perfectly sweet and sugary; in fact, if left till starting to shrivel will be all the better; it will then be found to dry more quickly and weigh out very much heavier. After gathering, the fruit should be dipped without delay in a boiling lye, made up of 1lb. caustic soda to 10galls. to 12galls. of water, submerging from 8 seconds to 10 seconds; any longer than this will cause the fruit to crack when spread, with a consequent loss of weight. Should the day be very hot it is advisable to stack the fruit for a few hours before puting it out to dry. It is a good plan to store the fruit around on the trays at least once a day during the drying process; it will then be found to dry much better and more evenly. The light varieties, after dipping, should be put straight into the sulphur box, this being necessary to retain the color, which should be a nice golden one. About 2lbs. of sulphur is required for every 100 cub. ft. of air space. The fruit should be allowed to sweat for a time, then again dipped with a little oil or glycerine, to give it a nice glossy appearance. The apple is not looked upon as being very profitable for drying purposes, owing to the large amount of waste, great loss of weight, and high cost of labor. Almost any variety of sweet white-fleshed apples will dry well, such as Cleopatra, Rome Beauty, Mobb's Royal, and Lord Suffield. Possibly apples could be more successfully dried with

APPOINT THE—
EXECUTOR TRUSTEE AND AGENCY COMPANY
OF SOUTH AUSTRALIA, LIMITED,
Executor and Trustee of Your Will.
Established, 1880. Estates and Trust Funds (1922) £5,105,442. Write for our Booklet.

DIRECTORS:
W. HERBERT PHILLIPPS, Chairman.
JOHN BARKER. G. J. COWIE.
A. G. RYMILL. JAMES H. GOSSE.
SIR GEORGE BROOKMAN, K.B.E.

Pastoral and Agricultural Inspector .. CHARLES GRIEVE.
Manager .. .. E. W. WILLIAMSON.

TEMPORARY PREMISES—
11, GRESHAM STREET - - ADELAIDE.

the evaporator than any other fruit; large quantities could be dealt with in a short time in this way. No other fruit loses its color so quickly as the apple if not properly treated, and if sun dried it is useless to attempt to produce a good sample unless the weather is hot. An up-to-date paring and coring machine is required, and when treated with this, the fruit should be thrown into a mixture made up of 1lb. of common salt in 5galls. of water; from this it is taken, and any parts not peeled, or if there are any damaged portions, cut away with a sharp knife, slice into rings, and again put into the salt mixture for a few minutes. After draining well it is spread thinly on trays and put straight out, no matter how hot the day may be—the hotter the better. Trays made of ½in. mesh wire-netting will be found more suitable than those constructed of wood, as they allow a better circulation of air, which means a considerable shortening of the drying period. For drying purposes the Duchess pear will be found the most suitable. The fruit should be carefully picked and stored for a week or two, to ripen to a nice golden color before being cut. Medium-sized fruits are halved with a sharp knife, and the core and stem removed. When thus prepared they are spread in single layers on wooden trays with a smooth surface, and put into the sulphur box without delay, and subjected to the fumes from eight hours to 16 hours. It will be found necessary to use a larger quantity of sulphur for pears than any other fruit, 4lbs. to 5lbs. may be used to every 100 cub. ft. of air space. When drying they should not be subjected to extremely high temperatures, hence it is advisable to keep the fruit stacked during very hot days. When ready to be taken up, the flesh of the fruit should be plastic and somewhat sticky, and after being allowed to sweat it should have a soft putty-like feeling. It is then ready for packing." In the discussion which followed, some members preferred racks 5ft. wide, as the area then available would be equal to another rack under the same roof. Some members preferred a 6ft. wide rack, but unless care was taken to see that the racks were not overloaded in the centre they would take too long to dry. There was also a general discussion upon the paper as a whole.

MALLALA (Average annual rainfall, 16.88in.).

November 20th.—Present: eight members.

WHEATS FOR HAY.—There were types of wheats which were essentially grain varieties, others hay varieties, and others which were suitable both for grain and for hay, remarked Mr. F. Arnold, in a paper. To the average farmer whose harvest was divided between hay and grain the last named would be found of greatest value. The paper continued:—"In selecting a good hay wheat, the most essential detail to consider is weight. To secure a good weighing hay, wheat must be used which will produce a solid straw plant and also a well-headed one containing plenty of grain. In this type of wheat it will be found that the hay does not shrink very much in the drying, and, therefore, does not lose so much weight as do hollow-strawed wheats, which almost invariably shrink. If a wheat possessing the qualities mentioned is left until it is in a nice yellow stage, it is almost sure to yield very heavy hay. Care must be taken, however, not to delay the cutting until it is too yellow. So doing will spoil the hay, because it will not have enough color, and one of the main selling qualities will be gone. In an ordinary year, when there is plenty of hay of an average quality about, pale hay is not very much in demand. Wheats that produce heavy hay do not necessarily produce good feeding hay. For instance, Combination as a weight producer has few superiors, but it is not a really good feeding hay. It is perhaps worth mentioning that Combination is a very fair dual-purpose wheat. It produces both heavy hay and a heavy yield of grain. It will be found that there are wheats which produce good feeding hay, but when it is put over the weighbridge it will be found to be on the light side. Florence is one of the best examples of this particular type. When cut slightly on the green side this wheat makes very fine hay, either for chaffing or feeding long, providing, of course, that it has not grown too rank. This applies to all kinds of wheats. Rank hay contains very little sugar, and consequently lacks nourishment. Now we come to the types which yield both good feeding and good weighing hay. Bearded Gluyas and King's Early varieties will be found to be two of the best examples. Both wheats, when not cut too ripe, will produce a sweet, sugary hay, which is much relished by the stock. Both varieties if left for grain will yield well. The chief drawback with Bearded Gluyas is that it is liable to rust. Of course, if the plant takes rust badly it spoils the hay both for feeding and selling. With King's Early our experience has been that it goes off in white heads much more than the average wheat. But this may be because the ground does not suit it, and it would be wrong to condemn it for that reason. As an ideal all-round hay wheat of good feeding and weighing combined, my choice would rest between Bearded Gluyas and King's Early.''

NANTAWARRA, December 28th.—FODDER CROPS.—In opening a discussion on this subject, Mr. A. F. Herbert said he had sown Hubam clover, and the plants were making good growth, some being 3ft. 6in. high. Mr. Herbert thought that if the clover was planted over the fields it would prove a valuable fodder. Mr. R. P. Uppill stated that a year or two ago he sowed through a drill some Johnson grass seed. The plants came up about October or November, and continued to grow to a considerable height, making splendid feed when the stock were turned into the stubble paddock. The seed was sown on light sandy ground, and grew again after fallowing the following year. Such a crop would help to bind the sand hills, and also provide feed for the stock.

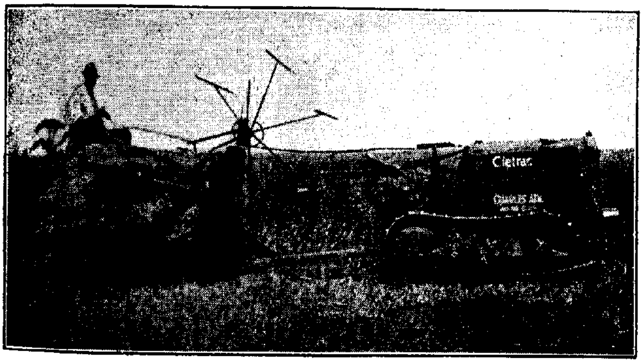
OWEN, January 12th.—Mr. R. C. Scott (Experimentalist, Roseworthy Agricultural College) attended the meeting, and delivered an address, ''Improvement of Wheats.''

WILLIAMSTOWN WOMEN'S, December 6th.—One of the members read an article, ''Tomato and Cucumber Culture.'' An interesting discussion, dealing with the insects attacking the plants and the best methods to adopt to control the pests, followed.

WILLIAMSTOWN, January 5th.—Mr. J. J. Fry contributed a paper, ''First Aid,'' and an interesting discussion followed.

The CLETRAC TANK-TYPE TRACTOR

WITH THE CLETRAC LINE-DRIVE.



MAKES A ONE-MAN'S JOB OF ALL FARMING OPERATIONS

FOR ECONOMY, SIMPLICITY, AND POWER, CLETRAC TRACTORS FEAR NO RIVAL.

SOLE AGENTS—

CHARLES ATKINS & CO., LTD.,

CURRIE STREET, ADELAIDE.

WESTERN DISTRICT.

LAKE WANGARY.

October 9th, 1922.—Present: 11 members and four visitors.

Care of the Brood Mare.—Mr. T. H. Wood read a paper dealing with this subject. He said:—"Forty-four weeks is regarded as the period of gestation for the mare under normal conditions, but this is not by any means always borne out in practice. There have been cases where a mare has foaled four or five weeks prior to the normal date, and, on the other hand, the time has been exceeded to the same extent. Many people blame the sire if they obtain a poor percentage of foals, but it must be borne in mind that the mare plays a more important part than the sire in this regard. To secure the best results the mare should be returned to the sire every ninth day, and after each service it will be found advantageous if the mare can be spared to leave her out of work for two or three days. Should the mare prove spiteful towards the sire when presented to him on two or three consecutive occasions, in most cases it may be presumed that she is stinted. As soon as you are reasonably certain that the mare is in foal she should only be put to light work. It will be better to keep the mare in foal at light work to within two or three weeks of foaling, but work entailing heavy pull, or work which is liable to strain the mare in any way, should be avoided. During the last two or three weeks of pregnancy the mare should be kept in a small paddock by herself and watched closely."

LIPSON.

January 6th.—Present: 10 members.

Sheep and Wool.—Mr. A. B. Wishart read the following paper:—"No farm can be looked upon as complete and up to date without a flock of sheep. Sheep not only keep down weeds and enrich the land, but they show a better return than any other line on the farm. With the prospect of freezers being established in our district in the near future, it may be a debatable question which type of sheep would show the best return, but whatever is said in favor of the crossbred, there is no gain saying the fact that with the present high price of wool there is no sheep that stands out as an all round money maker like the Merino. In the event of crossing being desirable, it is essential that the supply of good Merino ewes for that purpose be maintained. My advice to sheep owners is, that unless they are prepared to sacrifice the quality of their flocks they should not keep crossbreds. If the cross is to be kept let the first object be mutton, and wool a secondary consideration, for with the Merino, the wool is of first importance. A very noticeable feature in our show rings of recent years is the strong preference the judges appear to have for the strong woolled Merino. Whilst agreeing that the ram should be a bold and strong woolled sheep, I think great care should be exercised that such a point is not carried to excess, because without doubt it is the fine wools that are commanding the highest values to-day. To show the relative spinning qualities of the various types of wool, I quote from Cooper's Wool Notes, as follows:—'Wool tops is the name given to wool after it has been scoured and combed, and the following numbers are used to represent the spinning qualities of the different classes of wool—1lb. 60's spinning quality will spin a thread of yarn 60 times 560yds.; 70's super Merino will spin 70 times 560yds.; 56's to 58's Quarterbacks and Comebacks correspondingly less down to 32's coarsest Lincolns.' From these few references it can readily be seen the higher the spinning quality of wool the higher its value. It therefore appears dangerous in selecting rams totally to ignore quality for strength, what is required is a combination of both. Having then decided the type of sheep that will show us the best return, it is the duty of every sheepowner to make himself thoroughly acquainted with the habits and requirements of his flock. Frequent changes from one paddock to another are always appreciated by the sheep. If possible, a good water supply should be in every paddock. If that is not possible, it is better to cart water than make the sheep travel long distances. The flock that has a convenient water supply will do better and yield better and cleaner fleeces at shearing time than the much travelled sheep. Before shearing, I advise a thorough disinfection of the wool shed and yards as a safeguard against blood poisoning. I had the misfortune to lose about 15 valuable sheep from this cause last year, and not having an experience of that kind before, did not take the precaution that would have prevented such a loss. However, in future, I mean to take every care to prevent a recurrence, and advise others to do so before an outbreak occurs. In preparing the small clip it is not advisable to make too many classes, as odd lots do not sell so well as larger lines. My method is to class out and shear as follows:—All wethers above weaners; hoggets, both sexes; ewes; lambs. Skirt well, but not too heavily, and from each of the above classes, excepting lambs, class out any fleeces that may be extra heavy in grease, ragged, short, or discolored, and make a separate bale of them. All bellies should be removed. Brand your first fleeces AA wethers, or ewes, as the case may be, and the bale of seconds A wethers and ewes. Brand the bales distinctly. Buyers remember brands, and give more for wool they know corresponds with the descriptions given by the grower.''

COLLIE, January 6th.—Mr. A. P. Rowen delivered an interesting and instructive paper, ''Care of Farm Engines,'' and replied to a number of questions regarding the four-cycle engine. Mr. A. D. Dodgson also read a paper, ''Methods of Poisoning Foxes,'' which was well discussed. Members were of various opinions as to the best method of poisoning foxes. Messrs. D. Gunn and P. P. Kenny thought that the strychnine took effect much more quickly if mixed with soda.

STREAKY BAY.—At a meeting held during September, Mr. A. P. Kenny read a paper, during the course of which he detailed his experiences with different types of harvesting machinery during different years.

McLACHLAN, December 2nd.—Mr. T. Puckridge gave an address, ''The Introduction of the Merino Sheep into Australia.'' Other subjects of local interest were also discussed.

McLACHLAN, January 6th.—Mr. E. Klopper read a paper, ''The Necessity for a Blacksmith's and Carpenter's Shop on the Farm.'' Mr. Klopper subsequently answered a number of questions, and a good discussion followed.

NECESSARY FOR THE COUNTRY

"MONIER"

SEPTIC TANKS CONCRETE PIPES.

MADE IN A VARIETY OF SIZES.

FULL PARTICULARS FROM

S.A. REINFORCED CONCRETE Co.,
BOWMAN BUILDINGS. TEL., CENT. 3562.

EASTERN DISTRICT

(EAST OF MOUNT LOFTY RANGES)

BARMERA.

December 6th.—Present: 27 members.

The Superintendent of Experimental Works (Mr. W. J. Spafford) attended the meeting and delivered an address, "Manures and Manuring."

On December 12th Mr. C. G. Savage (Deputy Horticultural Instructor and Manager of the Berri Experimental Orchard) gave a demonstration of summer pruning in Mr. R. J. Langden's garden.

Messrs. A. Ross and T. S. Oldham attended a meeting of the Branch held on December 19th and addressed the meeting.

To a gathering of 29 members and a large number of visitors, Mr. W. Muspratt (Irrigation Instructor and Inspector) delivered an address, "Irrigation, Cultivation, and Summer Pruning."

GLOSSOP.

November 1st.—Present: 29 members.

THE SETTLER'S FIRST THREE YEARS.—The Hon. Secretary (Mr. W. N. Ellis), who read a paper under this title, said during the first three years the fate of a block was determined, as also was the settler's financial position for many years to come. Resources of all kinds should be husbanded against the lean years. During the first two years the blocker should grow and conserve as much hay as possible. He considered it a mistake to be over generous to the horses, simply because a good supply of hay had been put into the stack. *The First Year.*—During the first year it was necessary to decide upon the "lay-out" of the block, and work according to a plan of operations. The blocker should ascertain the best method of working his holding and not be too proud to be a seeker after knowledge. In the first year the foliage on the trees and vines should be encouraged. If that were satisfactory, it could be taken for granted that the roots were making a healthy growth. So soon as the block was allotted, the settler should place an order for the posts, and the trellis should be completed by September of the second year. Frequent cultivations were important; at least once a fortnight was recommended, while the earth around the trees and vines should be regularly hoed. Immediately the cover crop was harvested the strip of land that had carried the crop should be ploughed and harrowed. One horse would prove sufficient until the cover crop was harvested in the second year, when a team of two would be required to do the ploughing and breaking up. He recommended a good deep ploughing about May. Two horses should be harnessed to a single-furrow plough and the land worked to a depth of about 9in. All roots and stumps should be grubbed out to facilitate irrigation and cultivation. *The Second Year.*—The main work during the second year was to bring the vines up on to the wire so soon as possible. When the vines had made 9in. of growth, disbudding should be commenced, two good shoots being left in a good position, *i.e.*, growing in a line with the trellis. Next came the tying up of the vines to the trellis. A string should be run from the top of the spur to the wire above, the strongest shoot twisted around the strain string, the other one being broken off. When the new growth was a few inches above the wire it should be pinched back to 6in. below. When the arms had made a growth of 2ft. along the wire the ends should be pinched off to make the arms throw out laterals and to stiffen the vine. Young trees should be summer pruned, and all surplus shoots rubbed off. *The Third Year.*—The trees should be pruned for shape and the vines for profit. For Gordos and Doradillos the speaker considered arms 14in. to 18in. long enough, currants could be left longer, according to the strength of the vine. Sultanas, as a rule, would only stand one rod on each side of the crown during the first fruiting year. It was important that the arms should be securely tied to the wire, otherwise the wind would do a good deal of injury. It was also necessary during the third year to build a rack and make provision for drying material. "Cultivate deeply and often" should be the motto of every blocker. When harvesting time arrived, the blocker should not be in too great a hurry to have a display of fruit on the rack, the fruit should be allowed to mature on the vines, when it would yield a much better return.

RENMARK (Average annual rainfall, 10.93in.).

September 1st, 1922.—Present: 25 members and one visitor.

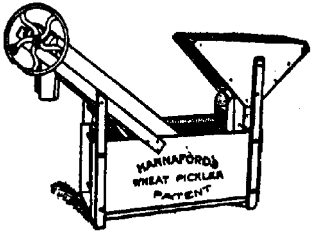
Dried Fruit Packing.—Under the title "A Few Points on the Packing Side of the Dried Fruit Industry" Mr. F. Cole contributed the following paper:—"At the present time, and in the near future, when the dried fruit production will be enormously increased, the necessity for improving our methods of packing, classing, and grading will have to be considered. Our export in a few years, when the returned soldier blocks come into bearing, we are told, will be fully 80 per cent. of the total pack. We shall then almost wholly be dependent upon outside markets for the disposal of our fruits. We shall have to meet the competition of America and the Mediterranean fruit-growing districts, and it will be necessary to pack to a given standard. The maintaining of that standard will be a difficulty which the A.D.F.A. will have to cope with. The present system of inspection and classing is by no means perfect. Firstly, we will take the present method of fixing standard samples, which is done annually at Mildura. Up to the present time the standards have been fixed by Mildura and Renmark delegates from the various packing houses, the standards being arranged according to season. This, to my mind, is a fatal mistake; standard grades should be fixed and adhered to every year as near as possible. I would recommend that a head inspector be appointed for the whole of the association, who should select the grade samples in conjunction with the president, and not the representatives of various packing houses. He should then send samples to all the districts.

DURABESTOS
WILL MAKE A
DURABLE HOME

DURABESTOS is the most permanent and perfect home building sheet. It is made of Asbestos-Cement, a material like marble for durability. As easy and economical to erect as wood lining.

SAMPLE AND BOOKLET POST FREE FROM

WUNDERLICH,
LIMITED,
THE CEILING PEOPLE,
113, CURRIE ST., ADELAIDE



THE

HANNAFORD WHEAT PICKLER

Is a complete compact machine to thoroughly and successfully pickle and clean wheat at a reasonable rate per hour.

The method is the best.
The process is continuous.
The operator is clean and not hard worked
It turns the irksome job into one of pleasure.

Users appreciate this clean method of pickling, and consider the machine has advanced pickling methods, and put them right up to date.

This machine is a boon to the farmers who appreciate good work and a clean method.

FULLER PARTICULARS FROM

ALF. HANNAFORD & Co.
Prospect, South Australia.

The districts should adhere to their present system of having their local inspector to supervise the shed classers, but in addition to this the head inspector should visit all the districts under the A.D.F.A. at least twice in a season, to see that the local inspectors are keeping to the true standard. Without this head inspector there is bound to be some variation in the grades of the different centres. The head inspector should work in conjunction with the Customs Officer in the inspection of all exported fruits, in order that the officer may have the benefit of expert opinion, so that he may see not only that the fruit is wholesome, but that the standard grades of the exported fruit are maintained. This inspector should be available for the department's use in the case of outside fruit as well as the A.D.F.A., if such aid is required. There would then be a thorough supervision of all exported dried fruits from Australia, and thus we might do away with the possibility of any unscrupulous dealer buying inferior fruit for the purpose of export, which in the past has done so much injury to the dried fruit business in our overseas markets. My second point is the blending of various growers' fruits in the one grade. Unless this blending is carefully carried out you cannot get an even grade of fruit. In every grade there are variations. There is the bottom, the standard, and the top of the grade. The shed classer should mark the sweat boxes with a distinctive mark to enable him to stack these in separate stacks, showing whether the fruit is top, middle, or bottom of grade; and when grading the fruit should be so placed in the hopper that the whole will be blended when going through the machine. Fruit graded in this way will show no variation in grade all through the season, and this should be the aim of all packers. Packing under separate growers' brands should not be allowed by the association, as undoubtedly it is not in the best interests of the growers to have a multitude of samples of the same grade, and fruit so packed will not be acceptable to the English market. To obtain best results in the packing, grading, and marketing of our fruits it is absolutely necessary to get the help and co-operation of the grower. He must do his portion of the work carefully and well, as no packer can make bad fruit good. Care must be taken in the drying and handling before delivery to the sheds. Fruit insufficiently dry, or fruit made sticky through bad handling on drying greens, cannot be properly processed and will always turn out a bad sample, besides giving the packer an enormous amount of trouble. I understand there is a good market for dried fruits in the East, and when catering for this market packing in tins will have to be considered. This will increase the cost of packing, but will pay if we hope to do a trade with these countries. For the English market we may have to consider the advisability of packing in smaller packages than the 56lb. box. Sultanas and currants are not graded through riddles (with the exception of the buck riddle in currants) and are classed wholly on color. I understand the English market are asking for the currants to be graded as to size as well as color. If this becomes necessary it will be impossible to grade through sieves any fruit that shows indication of dampness, as the hole in the riddle would be so small that it would soon get clogged, and the fruit would pass over instead of going through the holes. I am of opinion that better samples, more even in quality, could be obtained by grading to two sizes in the three and two-crown grades. Sultanas particularly could be improved by passing over a riddle and separating the large from the small fruit. I foresee a difficulty in obtaining a sample that would eclipse the Smyrna sultanas, owing to our rack drying, as the fruit so dried has a piebald appearance, and is not nearly so even as the tray-dried article. The question of pear grading and packing is a subject requiring a good deal of thought, and some definite standards will have to be fixed both as regards color and size. Up to the present very little has been done in this way, some sheds grading by machinery, others maintaining that hand grading is the best. In my opinion machine grading is a failure. The hand grading by the individual grower has its drawbacks, as the human element comes in, and it is impossible to get the same standard in the minds of various growers and their workmen. The only feasible way seems to be hand grading in the sheds. This, of course, means extra expense. The varieties of color between various growers' fruits is the cause of a great difficulty, and some means will have to be evolved whereby a universal color can be obtained. At present we have several shades of color, from the very light sulphur color to the dark flesh color obtained by exposing longer to the rays of the sun. There should be a meeting of all pear growers held before next season to arrive at definite methods of drying to ensure the most desirable color in the dried article. Growers must also bear in mind that the cull pear is useless, as there is no sale for such fruit, and the heavy expenses involved in packing and freights will be entirely lost. Windfall pears should never be dried, as experience has proved that this fruit does not pay for the cost of handling. In conclusion, I strongly advise growers to take a pride in the preparation of the dried fruits they are producing. Let each aim at the top quality, as the time has come when the industrious, careful man will be the one to make a financial success of fruit-growing. It is a very peculiar thing, and one that I have always noticed, that the new grower almost invariably produced a splendid dried article, and after he has been at the game some few years he gets careless, the same as his neighbour. Good dried fruits can be produced in nine seasons out of ten if due care is taken during the drying period.'' The paper discussed.—Amplifying his paper somewhat, Mr. Cole said that he regarded the suggested appointment of a head inspector for all A.D.F.A. sheds as very essential. For export purposes they must be in a position to supply grades true to sample, and he could see no other way of obtaining an equal standard in all centres. At present fruit for export was inspected by officers whose duty it was to see that it was ''sound, clean, and fresh,'' but who knew nothing about the grades of dried fruit; the inspection should be extended to ensure the exported fruit being true to grade. The unwisdom of keeping growers' packs separate had been brought home to him early in his experience as a packer; buyers wanted to be able to purchase in bulk on sample, and the multiplicity of samples which was a feature of the separate packing of each grower's fruit made this impossible and greatly added to the difficulty of effecting sales. Blending was quite necessary, not only to obviate the confusion of separate growers' packs, but the frequent difficulty of distinguishing the bottom of one grade from the top of the next. Mr. Basey heartily congratulated Mr. Cole on his very practical paper. He was in accord

"TOP" SUPERS-- **MEAN BIGGER and BETTER CROPS.**

"TOP" SPECIAL (45%) HIGH GRADE

SHOWS

SAVING IN UNIT VALUE OF PHOSPHATES.
SAVING IN FREIGHT CHARGES.
GIVES MORE FOOD TO YOUR CROP.
PRODUCES LARGER YIELDS.

Manufacturers—
The Adelaide Chemical & Fertilizer Co., Ltd.,
CURRIE STREET.

with Mr. Cole in his suggestion for the fixing of grade samples, and also considered the appointment of visiting inspectors very necessary. He believed there were association sheds on the river at present which were never inspected. Under such conditions it was hopeless to expect uniformity of grading. The grading of dried pears was a very knotty question. He could see no hope of successful machine grading and thought it would be necessary to have an inspector in each centre wholly for pears. Mr. Martin thought an association classer was necessary for every shed, and that a great deal more care should be given to the stemming and grading of grape fruits than was usually done. Speaking as an old association inspector, Mr. Morley-Taylor said that the first man to be attended to was the fruitgrower and not the packer. Unless fruit was properly dried it could not be properly stemmed. And Mr. Basey remarked that the English market seemed to demand the division of their fruit into many more grades—eight instead of three. Mr. Taylor thought some adaptation of a system originally adopted by the Mildura Fruitgrowers' Co-operative Coy. might be found advantageous. Under this system each grade was divided into three, and the grower was credited on delivery with so much weight of the top, middle, or bottom of the respective grades and paid accordingly. This, while allowing for the subsequent blending of the different growers' fruit, provided each grower with an incentive to produce a high-grade article.

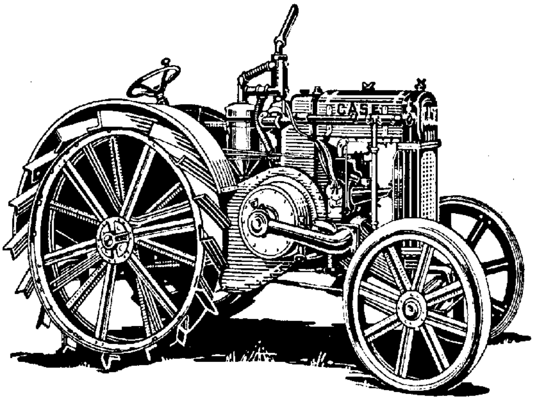
RENMARK (Average annual rainfall, 10.93in.).

January 4th.—Present: 21 members.

Fruit Drying.—In the course of an address on this subject, Mr. J. W. Johnstone first dealt with currants which, he said, he had tried to dry on wooden trays, racks, and 8ft. x 3ft. wire trays, but he had come to the conclusion that the wire trays gave the best results. It was his practice to allow the currants thoroughly to ripen before picking. When harvested he kept them under shade for the first four or five days. That was done by placing a tray in position, then about a tray's length away placing another tray; then a third would be placed with its ends resting on the other two trays. Thus his stack was built up, and a minimum number of blocks was needed, the ends of the trays taking their places. After about four or five days, with a shade over them, the trays were placed in the sun on hessians for two days, after which the currants were taken off the trays and put on hessians until they were dry enough for the sweats. During the time that the fruit was on the hessians it was important that handling should be reduced to a minimum, in order to preserve the bloom on the berries. He had sent about 23 tons of currants to the packing sheds, and of that quantity only one ton had been under top grade. His method of testing the berries to see if they were dry enough was to take one between the finger and thumb and press it. If it burst it was not dry enough, but if it merely flattened out he considered it ready for the sweat box. Such a test would, of course, apply to many berries. Sultanas were picked direct into dip tins, dipped as soon as possible, and placed on the trays without delay. Mr. Johnstone stated that it was far better to use a large dip tank (about 125galls.) than a smaller one. The fruit had a cooling effect on the water, and considerable delay was caused when a small tank was used. He had a water tank erected near the dip, and kept a steady and constant supply of fresh water flowing from the tank into the dip, thus avoiding any delay to allow the dip to be heated after replenishing. He considered it very important to keep the dip clean. If that point was not attended to the fruit would be poor in appearance, dark, and covered with mud and scum. A good plan was to have tins suspended in the dip, not touching the bottom of the tank, to catch the sediment. It was his practice to use a fresh dip every morning. He used 1lb. of caustic soda to 25galls. of water. If the fruit was very ripe, more soda would be required, and if the fruit was in bad condition it needed a still further addition of soda. He preferred a light dip, for although it took longer to dry the fruit, it gave a better color to the finished product than a very strong dip. He generally dipped about 40 tins without stopping, using a thermometer to show that the dip never exceeded 190deg. or got below 180deg. It was advisable, if possible, to have a cold-water dip for use after the caustic dip. It was more economic to spread the fruit lightly on trays, as it dried quickly, and would be more easily handled in the event of bad weather than if it were spread thickly. He thought that wooden trays gave the best

DON'T EXPERIMENT

—Buy a CASE Tractor



It is essential that a tractor possesses the highest possible efficiency. The difference between the average tractor and the efficient tractor is often enough to pay for the better machine in a few years. Durability and dependability more than any other factors determine the value of a tractor.

BE WISE!

Choose the tractor built by a concern whose reputation is known to be excellent, and with sufficient financial backing to make its guarantee worth something to you.

Choose the tractor backed by a concern with up-to-date branch houses all over Australia to give the right kind of engineering service at the right time.

When you hear our proposal to farmers and secure the specifications of this machine you will agree he is a wise farmer who buys a

CASE

Kerosene Farm & General Purpose Tractor

SOLE AUSTRALIAN AGENTS—

Commonwealth Agricultural Service Engineers, Ltd.,

Head Office .. .. ADELAIDE, STH. AUST.

'Phone—Central 6870. BRANCHES IN ALL STATES.

C22

color, but was sure that a good color could be obtained even if wire trays were used. He opened out trays after the fruit had wilted, and was never in too much of a hurry to get the fruit on to the hessians. It was better to leave it on trays a day or two after it was dry than to remove it whilst wet. He never overcrowded the hessians, and handled the fruit as little and as carefully as possible during that stage. He applied the same test to sultanas as to currants to find out whether the fruit was dry. Lexias were treated in a similar manner to sultanas, except that the lye was composed of from 15galls. to 17galls. of water to 1lb. of caustic soda, according to the state of the fruit. He used a cold-water dip afterwards to clean the fruit before spreading. Mr. Johnstone thought that the size of the pear crop would generally decide when the picking of pears would be started and the treatment that the fruit received in the block was the deciding factor as to the amount of waste that took place in the shed. Too much care could not be exercised in handling the fruit, and when picked it should always be protected from the direct rays of the sun. He was of the opinion that it was more economical to use boxes that one man could handle for storing the pears; the usual sweat boxes were too large. In the southern districts of the State it was the practice to sprinkle the fruit with water and then cover it with bags, &c., but he stacked the boxes in order of picking, and then left them until he thought the pears were ripe. That was an important point, because if the boxes were moved too soon or too often it had a tendency to delay ripening. If left long enough it would be found that nearly all the pears in a box were ripe enough to cut. At the time of cutting the pears should be mellow, and the knife should slip through them easily. The cutters should take care to cut the pears evenly; *i.e.*, not to make one part bigger than the other. Mr. Johnstone sulphured until there were no hard spots in the pears. If he found one or two insufficiently sulphured pears on the trays he would give them another charge of sulphur. It was better to use more sulphur than to lose grade. At the completion of sulphuring he left the trays in stacks for three or four days to allow the pears to harden or set, and thus avoid the risk of spoiling them in handling. He exposed the fruit to the rays of the sun until the edges were a good color, and then finished them off in stacks. After many experiments he had come to the conclusion that it was better to sulphur the pears without cutting out the moth or decayed parts, and made a practice of trimming up the fruit after they were dry. During the discussion, Mr. Howie said that in future growers should aim at getting better-quality fruit. That applied not only to pears, but also to currants, sultanas, lexias, &c. In future the size of the berries would play a great part in deciding the grade, especially so in connection with currants and sultanas. A complaint about the currants being too sour had been received from the overseas market; that indicated that currants were picked before they were properly ripe.

YOUNGHUSBAND, November 2nd.—Mr. W. G. McNeil read an interesting paper, "Agriculture in Western Australia." Other topics of local interest were brought before the meeting, and an interesting discussion followed.

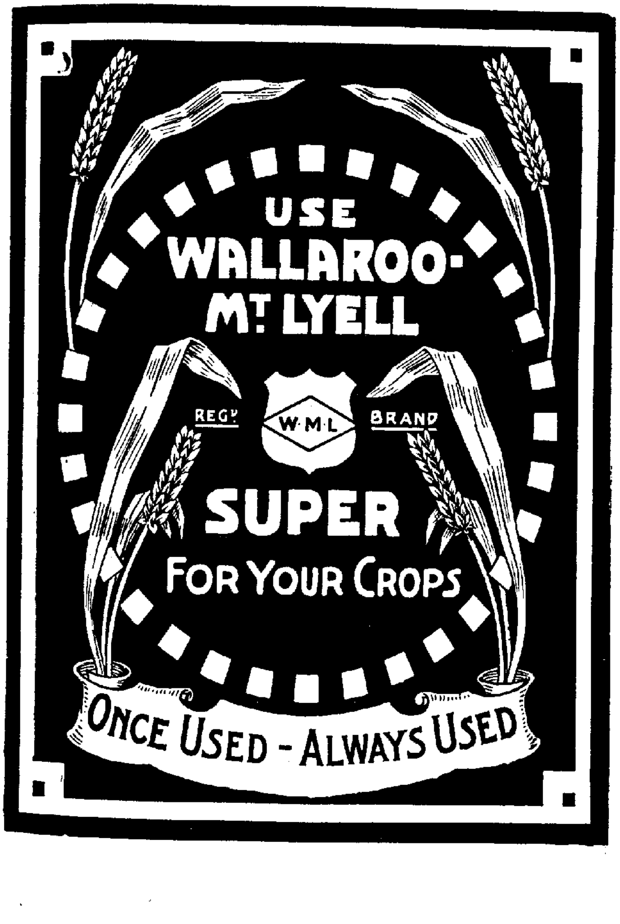
SOUTH AND HILLS DISTRICT.

BALHANNAH.

January 5th.—Present: 25 members.

CARE AND TREATMENT OF HORSES.—The following paper was read by Mr. A. Peacock:—"The majority of people water their horses before feeding. This practice, I think, is the best, because the stomach of the horse is small and water passes directly through the small bowel into the large one, carrying masses of undigested food with it if the animal is watered immediately after feeding. The question often arises, should a horse be allowed to drink when it is hot?

If it is used to having a drink when it is hot the animal will not suffer, but it is better not to let it take too much. See that the water supply is clean and free from any filth from the yard. Do not keep the horse without water for too long a period, because such is likely to result in colic. The most important item of horse treatment is feeding. It is not so much what you feed the horses with, as how you feed them. Some farmers will put in half a bag or more of chaff per horse and leave it until it is cleaned up, and wonder why their horses are so thin and scraggy. If you want your horses to look well, feed them at regular intervals with good feed that they will clean up readily. The food must meet several requirements. It must be wholesome, clean, and sweet. We must remember certain physiological points about the horse that have a bearing on the methods of feeding. The stomach of the horse is small, with a capacity of about half a cubic foot. It works best when only two-thirds full. In estimating the amount of food, we have to remember that bulky foods, such as hay and straw, take up four times their own weight in saliva, whereas oats will only take up their own weight, so that saliva adds considerably to the weight of the contents of the stomach. Hay and straw will pass out more



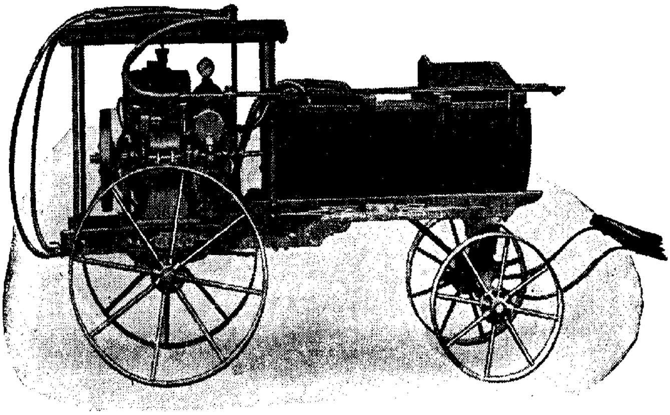
quickly than oats, as there is more nitrogen in oats, and these take longer to digest. The stomach begins to empty itself soon after the commencement of the meal, and the food passes out at the same rate as it was taken in, until the meal is finished. This action eases off, and a number of hours then pass before the stomach empties itself. It is certain a horse cannot do heavy work on a full stomach, and feed during working hours should be in small quantities of the best quality, preceded by a drink. Errors of judgment in feeding often lead to colic and other troubles. It is not my intention to set down certain quantities of feed per horse, for rations that would keep one in condition would leave another very thin. Feed your animals till you have them in the desired condition for the work you have to do with them; good hard condition that the horse can work with, and not be all lather when working. Some people talk about the splendid condition of their horses, when really the animals are only fat, and if put to hard work would very likely collapse in a day. But the horse in hard condition is 'full of muscle and vitality,' and it is a pleasure to work him. If the horses are fed on dry feed during the week, a feed of lucerne, clover, or other green feed at the week end will be very beneficial, and act as a better tonic than drugs. The ideal food for horses in heavy work is oaten hay chaff, with a liberal supply of bran. The bran acts as a laxative, and keeps the bowels in good order. Give the horses that are in constant work and on dry feed a bran mash on Saturday or Sunday evening. Take two or three double handsful of bran with about an ounce of table salt and put it into a bucket. Pour hot water on to it, then cover until it is cool enough for feeding. Bran may be an expensive food, but it is a very cheap medicine. Grooming, which I am sorry to say is sadly neglected on many of our farms, is almost as essential as feeding. If we would keep our horses clean and fit, the brush and comb ought to be used every morning, and evening if possible, because the horse, when sweating, collects a certain amount of dirt which can only be got rid of by grooming. It should have its shoulders well brushed, the mane and tail combed and brushed out to free them from knots, and its legs and feet brushed daily. The legs of a draught horse are very hairy and should be brushed, not washed, as this latter practice is likely to bring on grease and other foot troubles. As the feet of the horse have to carry its weight, and pull the load, it is essential that they should be well looked after to keep them clean and free from disease. Standing in the stable in manure will do more harm to horses' feet than years of work. The ammonia of the dung and urine loosens the fibres and rots the frog. I would like to stress the importance of cleaning the stable every morning. Give the horse plenty of straw on which to lie, and it will rest better and be more fit for its work, and keep in better condition. We should endeavor to find out the disposition of each animal if we wish to get the best results from it. While one will take a lot of forcing, another will work freely and become excited if you use a whip. Be firm, but not brutal, and treat the horses with kindness. Remember that the horses need a rest after working hard to recover their wind and to ease the strain on the body, because the horse can be likened to a machine which gives of its best if given proper care. When a young horse is being handled, it should be properly mouthed, taught to lead, and answer the rein before being put into the team. Break it with an open bridle, as it becomes accustomed to things more quickly. I prefer to break a young horse at four years, in preference to an earlier age, as it can then stand the work better, and its bones are more set. A colt should not be given a full day's work at first, nor should it be asked to pull the same load as older horses in work. Be firm, but patient, and the colt will turn out satisfactorily. The shoulders need watching to see that they do not scald. This sometimes happens. more particularly in hot weather. The best and most effective cure I have found is to wash the shoulders with cold water directly the collar is removed. This not only prevents scald, but will effect a complete cure. Friction is the chief cause of collar trouble, and the secret of prevention is to get the collar to fit closely in order to reduce friction. If the collar is too wide it will roll about and so rub off the hair and cause sores to appear. I prefer leather-lined collars, because one can wash and clean them. Do not have the collars too long or the horse will develop a sore neck or fistulous wither. Treat the horse as one of your best friends, and when it is too old for work do not sell it, but give it a friendly bullet."

FRUITGROWERS & PASTORALISTS

METTERS'

Nufrend Spraying Outfits

Are manufactured entirely in our works, and can be supplied to fill the requirements of the small grower as well as the largest requirements.



ILLUSTRATING OUR TYPE B. POWER OUTFIT.

ALL PARTS OF PUMP ARE STANDARDIZED AND MANUFACTURED IN METAL TO RESIST ACID COMPOUNDS.

CALL AND INSPECT, OR WRITE FOR COMPLETE ILLUSTRATED CATALOGUE, POSTED TO ANY ADDRESS.

METTERS, Limited,

142, RUNDLE STREET,
ADELAIDE.

SPECIAL NOZZLE FOR BLOW-FLY PEST.

BLACKHEATH.

January 5th.—Present: 5 members and visitors.

Care and Management of the Breeding Ewes.—Mr. H. Paech, who read a paper dealing with this subject, said the farmer who intended breeding lambs should secure strong, healthy, large-framed ewes, and endeavor to keep them in good condition throughout the whole of the year. Half of the flock of ewes should be mated to lamb during February, while the remainder should lamb during April. A month before lambing the wool should be clipped from the eyes of the ewes, they should also be crutched and an application of some disinfectant made to the tail to reduce the possibility of attacks from blowflies. No dogs should be used with the ewes in lamb, or with ewes with lambs, because the ewes become frightened, and at times would leave their lambs. A small paddock near the homestead should be reserved for the lambing ewes in order that the farmer could keep the flock under close observation and render assistance to any ewes that experienced difficulty in lambing. Provision should also be made for shelter for the lambs and ewes, and it was a good plan to place neck bells on 15 or 20 of the ewes to keep away foxes. The ewes should be yarded every night during the lambing season and also for a couple of months after the last lamb had been dropped. Every flock master should commence to hand feed the ewes about a month before the commencement of lambing. That would ensure a good supply of the milk in the ewe, which would result in a strong and healthy lamb. Some of the young ewes would not allow the lamb to suck, but if the ewe was shut up with the lamb in a small yard for a few days, and held a few times so that the lamb could get at the udder, the ewe would become accustomed to the lamb and would rear it without any further trouble. Hand feeding should be continued until there was an abundance of natural pasture. The speaker considered hay chaff and oats and lucerne chaff to be the best fodders for hand feeding. The feed should be placed in troughs raised 2in. or 3in. off the ground, to prevent the chaff being spoilt by water. It was also advisable to drive pegs into the ground—one on each side of the trough—to prevent the sheep spilling the feed. During the day the flock should be turned out to graze in a paddock containing a good supply of water, because the sheep would require a large quantity of water whilst on dry feed. The flock master should cull out from the breeding flock any ewes with only one quarter, and if any swollen udders were noticed the milk should be taken away to relieve the ewes. At six months the lamb should be taken from the ewe, to give the mother a chance to put on condition for the next season.

CURRENCY CREEK.

The Breeding of Pure-bred Stock.—Before an audience consisting of 16 members, on October 6th, the Hon. Secretary (Mr. P. H. Kilsby) read a paper. He said:—"A pure animal is one of a well-defined breed without mixture of other blood; a crossbred is the progeny of two distinct breeds. Most herd books will accept an animal which has been graded up by a bull of the same breed for at least five generations, but in every case the sire must be registered. The advantage of a pure-bred herd over that of a grade or cross is that on account of purity of blood there is less danger of the animals throwing back, perhaps, to some inferior type, the blood of which is in their veins. This should convince breeders of the value of purity of breed. Providing the sire has production to back him up, there is a greater likelihood of him getting animals possessing his type and productiveness. By using pure-bred bulls you are enabled to establish uniformity, evenness of type, and color to a more marked degree, and the cattle are worth more money. Select your heifers by keeping a record of their dams and selecting the best specimen of the breed according to the standard adopted for the breed. You should discard a heifer calf from a good cow, but which was born a weakling. A good dairy cow must have constitution, and a weakling calf is incapable of fulfilling requirements. Do not keep every pure-bred bull dropped. Only keep those from the best cows and conforming to the requirements of the breed. For instance, I would not keep a calf that was badly marked in color (unless it was well developed and from a cow that had put up a good record of milk and butter fat production) or showed any weak points as a calf. Providing it was well developed I would use a young bull sparingly at 15 months old; at two years allow him 25 cows to 30 cows, and at three years and over, 50 cows to 60 cows per annum. A grade animal is one that has one parent pure bred, the other being a mixture. We all know that grades may be bred up to such a high standard that they will serve the same working purposes as the pure breds. However, they are not generally as reliable breeders. Many men argue that their grades are as good as another's pure breds. This in many instances is true, but the owner of the good grades must bear in mind that his good grades are good because of the pure-bred ancestors. The more pure-bred ancestors the grade has the better grade it is. The credit of the good grade must be given to the pure-bred animal. No matter how highly bred a grade sire is, we can never depend upon him to the extent that we can the pure bred. There is back in his ancestry the impure mixture that is very liable to show at any time, hence the reason for using a pure-bred sire. Of course it must, on the other hand, be admitted there are many inferior so-called pure breds. It is only natural to expect, even in the most highly bred herds, an occasional cull will appear, hence the necessity for breeders of pure-bred cattle to discard calves which do not come up to the standard. Pure-bred bulls of good conformation and type, backed up by ancestors that have proved themselves to be sires and dams of merit in the production of milk and fat, are the only safe pure-breds to use. I am quite aware that for the average farmer suddenly to replace his nondescript cattle with pure animals, would greatly tax his purse, and it would be a case of impossibility to procure sufficient; he must therefore adopt the other alternative, and that is grade

NEPTUNE

SPECIAL OIL ENGINE CYLINDER OIL.
Recommended by leading makers of Oil Engines as
undoubtedly the Best Oil Engine Cylinder Lubricant.
REMEMBER—THE BEST OIL IS CHEAPER THAN NEW BEARINGS.
LOOK FOR THE BRAND.
ALL STORES OR
NEPTUNE OIL COMPANY, LTD.,
ST. VINCENT STREET, PORT ADELAIDE.

up his herd by using pure-bred bulls, registered in the Stud Bood. If farmers want confirmation of the result of such a system, I would refer them to the herd of Mr. Halliday, one of the members of the Murray Bridge Herd-testing Society. The final report, published by Professor Perkins, contains many data of interest to dairymen. A pedigree is merely an official statement giving the names of the breeders and the names of the sires and dams of the animal in question. Unless those ancestors were producing, and showed an improvement on their offspring the pedigree fails to supply us with the necessary detail. If a pure-bred bull cannot improve a grade or crossbred herd then he has failed on his mission. The low production of cows can be improved by the wise use of bulls. Some years ago a dairyman asked the late Mr. Hoard, of "Hoard's Dairyman," America, a question, "What is the most improved thing in dairying?" and he replied, "The sire." In support of my contention that the bull is more than half the herd, I summarise the position thus:—A matured bull is quite capable of serving 60 cows per year. Half of these might be reckoned to be heifers, but, on the other hand, a good cow only has influence upon her own calf. The bull can either make or spoil the entire herd. An inferior bull mated to a good cow must surely lower the powers of production of the progeny when compared with its dam. Time will not permit me to treat on matters which run hand in hand with breeding such as the proper crosses, care, feed, and attention to dairy cattle, but I feel that herd testing is the most important item in dairying operations. The points of a good dairy sire are as follows:—Head—Broad forehead, face of medium length and clean cut, muzzle broad and strong, nostrils large and open, eyes large, full and bright, ears of medium size, and fine texture. Neck of medium length, well crested, throat clean, blending smoothly into shoulders. Shoulders—Strong and blending smoothly into body, good through from point to point, and smooth and fine on top. Chest—Deep, low, and full between and just back of forelegs. Body—Strong and straight, with backbone well developed and open jointed, ribs long, broad, and well sprung, and wide apart, large abdomen strongly and well held. Loin—Broad and strong, level or nearly so. Hindquarters—Rump level and long from hip to pin bones, comparatively smooth at hip bones, thighs rather flat, long and wide apart, and open at the twist. Legs—Comparatively short, clean, and set wide apart, and squarely set under the body, feet of medium size, round, and deep. Skin—Nice handling, mellow to the touch; will fold over hand when gripped behind the shoulders; hair plentiful and nice to the touch. In a district like this, where we must combine stock raising with farming operations, the greatest single factor of profit and loss is the quality of the livestock. Poor livestock or good livestock poorly handled were never known to show a balance on the proper side of the ledger. Quite aside from the direct benefit of having the blood of high-producing strain in the herd, there is the secondary effect upon the farmer himself, when he sells his grade sire and buys a pure breed. The man who uses a pure sire takes more individual interest in his cows and the general care of his herd than does the careless breeder. A leading New Zealand dairyman stated that the production of the cow influenced the value of the land, for the greater the average annual production the greater return per acre. Registration of bulls is one step in the right direction, and it will mean a lot of mongrel bulls being castrated. My advice to farmers and dairymen is to club together and procure a pure-bred sire, and do away with the scrub, three-cornered animals."

CURRENCY CREEK.

January 8th.—Present: 10 members.

The Farm Vegetable Garden.—Mr. Sando contributed a paper, which was read by Mr. P. H. Plummer. The writer of the paper said the first care in the preparation of the vegetable plot was to see that plenty of well rotted stable manure was worked into the soil. Bush marrows, trombones, and cucumbers were easily grown if a plentiful supply of water was available. Tomatoes could also be successfully grown if sheltered from the wind and given plenty of water when first planted. French beans grew very quickly if sheltered from the wind.

COXS' SEEDS

GIVE EVERY SATISFACTION,

Because we only sell TESTED and TRIED VARIETIES.

Weather is always a matter of great consideration, but it is desirable that a supply of Sowable SEEDS SHOULD BE ON HAND, READY for any favorable opportunity.

Agricultural Seeds,
Vegetable Seeds,
Garden Seeds.

"INTERNATIONAL" STOCK REMEDIES, including Stock Food, Gall Cure, Worm Powder for Horses, Colic Cure, &c., always on hand.

ENQUIRIES INVITED.

E. B. COX & Co.,
SEED MERCHANTS,
Corner Rundle St. & East Terrace.

WE COULDN'T DO THE BUSINESS

Unless our Shares were right.

FORGAN'S CAST CHILLED PLOW
and
CULTIVATOR SHARES

have the Biggest Sale of any make in Australasia.

Why?

Because they
WEAR LONGER
and
COST LESS
than any other makes.

GIVE THEM A TRIAL.

J. & R. FORGAN,
Crystal Brook and Port Pirie.

METROPOLITAN ABATTOIRS, ADELAIDE.

MANUFACTURERS OF

MEAT MEAL FOR PIGS

Read Report of trials made by PROF. PERKINS, *Journal of Agriculture*, January and July, 1921.

MEAT MEAL
BONE MEAL
BONE GRIT
FOR POULTRY

For full information on above write to

The GENERAL MANAGER, Metropolitan Abattoirs Board, Box 578, G.P.O., Adelaide.

ALSO MANUFACTURED

BLOOD MANURE
BONE MANURE

The first sowing could be made during September, and additional sowings made each month until February. It was also advisable to have a plot of herbs, such as mint, spinach, and parsley. Cabbages and cauliflowers should be planted in a fairly sandy soil. Carrots, parsnips, and turnips should be sown in May. The writer did not think potatoes could be grown very successfully in that district, unless potash was added to the soil. In the discussion that followed Mr. W. Saltmarsh said members should be careful in using water from a bore for the vegetables, because such water sometimes contained magnesia, which was injurious to the leaves when sprayed on the plants. If bore water was used it was a better and safer plan to water the plants in trenches.

LONGWOOD (Average annual rainfall, 37in. to 38in.).

December 9th.—Present: nine members and 13 visitors.

Homestead Meeting.—The monthly meeting of the Branch was held at Mr. Roebuck's residence. The attention of the visitors was first directed to a plot of Purple-top turnips that had been sown very thickly. When the plants had made a fair growth Mr. Roebuck thinned them out, and fed the tops of the plants that had been removed to the fowls. Clumps of Moles Cherry, Burdett Cherry, and Woollybutt rhubarb were showing signs of excellent growth. The potato plots were not expected. In one plot of Carmens, three rows which had been sown with small seed appeared to be making more luxuriant growth than the 14 rows sown with larger-sized seed. The fodder grass plots then came under notice. The maize was 3ft. high, Japanese millet 1ft., and Sudan grass 6in. high. Mr. Roebuck stated that all the seed had been sown at the same time and under the same conditions. Afternoon tea was provided by Mrs. Roebuck. Messrs. Hughes, Nicholls, and Boyes gave a report of a recent field trial they had witnessed, which had been held under the auspices of the Balhannah Branch of the Agricultural Bureau. Mr. Roebuck then read a paper entitled "What May Be Grown in the Hills' Districts." Mr. Roebuck stated that after 30 years' experience he was convinced that the best working policy to adopt on small holdings in the hills was to go in for a variety of crops rather than specialise in one particular form of produce. Speaking of his experience with various types of fruit, vegetables, &c., Mr. Roebuck said that of the fruit he had grown, cherries, nectarines, and apricots had been a failure; peaches and currants gave unsatisfactory returns. Strawberries, gooseberries, and raspberries could be successfully grown in suitable spots. Apples, pears, plums, and quinces gave profitable yields. He had planted potatoes, onions, cabbages, peas, beans, turnips, and swedes every year on his property. Other vegetables that had been successfully grown were carrots, parsnips, celery, radish, cauliflower, broccoli, brussels sprouts, leeks, tomatoes, lettuce, artichokes, rhubarb, arrowroot, &c. On a piece of poor stony ground he had sown broad-leaf wattles and the bark yielded a return of £10 per ton. He also planted a few Maritime and Remarkable pines, but as the land was sandy and dry they did not start too well; but those that had started were making fairly good growth. He had also tried pigs, but the vagaries of the market caused him to abandon pig raising. For poultry he favored the White Leghorn as egg producers. If well managed they were fairly profitable. One or two cows were always kept on the place, and for these he found it necessary to grow some fodder, as the natural grasses in the hills were not much good except in the spring months. For winter green feed he sowed a mixture of 1bush. of rye and one bag of barley. That produced good feed, and would stand the cold and wet if planted on well-drained land. Garten White oats were recommended by the speaker. For summer fodder he expressed a preference for maize. Japanese millet was also good. He had tried lucerne, but it did not do well, and soon became choked with fog grass and dodder. Subterranean Clover and Paspalum were very good fodder grasses, and would grow on rather poor land. Paspalum would keep green nearly all the summer, and should be planted more extensively in the hills. In the summer of 1897 and 1898 he had grown about half an acre of tobacco. A good crop was grown, some of the leaf being 23in. long by 17in. wide.

LONGWOOD (Average annual rainfall, 37in. to 38in.).

January 6th.—Present: five members and two visitors.

HOMESTEAD MEETING.—The monthly meeting of the Branch was held at Mr. R. H. Lewis's residence. Members referred to the very clean appearance of Mr. Lewis's garden and orchard. Woolly blight and red spider had done considerable damage to apple orchards in the district, but Mr. Lewis had paid close attention to spraying and cultivation. He spoke highly of the value of lime and sulphur as treatment for both pests. Afternoon tea was provided by Mrs. Lewis.

MOUNT BARKER (Average annual rainfall, 30.73in.).

November 29th.—Present: 25 members and three visitors.

HAY AND CHAFF.—Mr. H. Pope, who read a paper dealing with this subject, said in growing crops for hay and chaff, the farmer had to be guided, to a very large extent, by the varieties of cereals favored by the stock and also by the climatic conditions. Clean land, clean seed, and the sowing of the seed under proper conditions were three essential points in the growing of successful crops. When the crop was being cut, particular care should be exercised to see that the binder was tying a firm sheaf, otherwise considerable trouble would be experienced in handling the sheaves, and a good deal of waste would result.

BAGOT, SHAKES, & LEWIS, LTD.,
Stock and Station Agents,
Wool and Produce Brokers, Shipping Agents, General Importers and Exporters, Land, Loan, Financial, and Insurance Agents.

We are now carrying large stocks of—
SUPERPHOSPHATES.
Woolpacks. Cornsacks. Bran Bags. Twines. Fencing Wires. Wire Netting. Galvanized Iron. Bore and Well Casing. Pipings. Cement. Field Gates. Troughing. Sheep Dips. Sheep Shears. Rabbit Poison. Machinery Oils.

Sole Agents in South Australia for—
"Acme" Sheep Dip.
"Knoblo" Blowfly Oil.
"Reliance" Petrol Engines.
"R.I.P." Rabbit Poisons.
"King Loc" High Tension Galvanized Steel Wire.

"CLAN LINE STEAMERS."

Head Office: 18, King William Street.

Motor Garage and Workshop: Light Square, Adelaide.

Wheaten hay, he thought, could be stooked straight after binding, but oats, cut on the green side, should remain at least one day in the field before being placed in the stook. Carting should be commenced without any undue delay, and, if possible, a hay storing shed should be erected. If the farmer intended erecting a chaff-cutting plant, he should secure an engine considerably more powerful than that actually required, so that the engine would not have to be constantly working at its full capacity. To make a good sample of chaff the knives should be properly and well sharpened, and if the hay was very dry and dusty, or if cutting was carried on during hot weather, the sheaves should be damped before being put through the cutter. The following was an estimate of what the speaker considered it would cost the farmer who owned and worked four horses to produce a one ton crop of hay:—Ploughing 12s., harrowing twice 3s., drilling 3s., rolling 2s., seed 9s., super 6s., binding (including twine) 10s., stooking 2s., carting 5s., chaffing 12s. 6d., interest on land for six months (£25 at 6 per cent.) 15s., interest on plant 2s. 6d., making a total of £4 2s. Mr. Pope was of the opinion that if the farmers on the lighter soils in the Mount Barker district gave the land adequate dressings of manure and kept the stock out of the paddocks, they would obtain better returns, with less expense, from crops of clover. Stock were very fond of clover, it could be grown during a very wet season and on very poor land, provided liberal applications of manure were made to the soil. The same could not be said of any form of crop sown for hay, for if the season was very wet the crop would in all probability be spoilt by water-grass and weeds.

RAPID BAY.

October 7th.—Present: 19 members.

Poultry on the Farm.—"Poultry on the farm can be made a profitable sideline with reasonable management," premised Mr. F. Putland, in the course of a paper, in which he dealt with various breeds of fowls, their evolution, and utility. "We can rely on getting good prices for poultry for some years to come," the paper continued. "To get those prices we must have the right breeds for table purposes. We must have size, condition, and quality. The birds must be young and of good color, and for that purpose I favor the Dorking and Wyandotte cross for this district; they are well feathered, and are good winter layers. When selecting eggs for setting to supply laying hens, do not use eggs from the hens that commenced laying first. A quick beginner is often a poor finisher. When your hens are laying in full swing, then select the eggs. They should be large, and with good even shells. Put under the hen as many as she can cover comfortably, and no more. It is a good plan to mark them with ink; then if another hen lays in the nest the fresh egg can be easily seen. I have proved that the best eggs to set are the eggs from hens from two to three years old. Pullets' eggs are not so reliable, and should never be used. Eggs for setting should be kept in bran in a dry, cool place, and should never be kept longer than from 21 days to 25 days. As many as the hen can cover without distressing her is the proper number. The period of incubation is subject to slight variations. From a practical point of view, now that foxes are numerous, it is necessary to have some enclosure in the shape of a fowlhouse, the construction of which will vary according to individual ideas. I would recommend a lofty wooden building, with the floor raised 2ft. from the ground, with wooden grating for the floor where the fowls roost. Where tick or lice are likely to infest the fowls, it is a good plan to fasten fencing wire to the roof and floor, and fasten the roosting planks to the wires. The roosts should be at least 3in. wide, in order that the birds may rest their bodies while sleeping. The house should be sprayed to kill all vermin, and for that purpose I would recommend softsoap, 8oz.; kerosine, one bottle, mixed with 2galls. of boiling water. It is very necessary that the house be kept clean and the poultry healthy to be profitable. In selecting roosters for breeding purposes, type should take preference over color. Judges at shows somtimes select color in preference to type, and you will see sometimes a Wyandotte of good color, with feathers on its legs like a Cochin, given the prize against others of good type, in which case the judgment is wrong. If we breed from good black fowls they will often have a blue tinge on the feathers, yet they are true to type. In roosters selected for breeding table birds, the body should be long and deep, the legs short, the breast broad and expansive, and rotundity should be aimed at rather than gauntness. Avoid yellow-legged fowls, both on the male and female side, also large-combed fowls as a general rule.'' The paper concluded with a brief reference to various ailments to which poultry were subject. An interesting discussion followed, and several members related their experiences with poultry.

RAPID BAY.

December 9th.—Present: 18 members.

Fat Lamb Raising.—In the course of a paper dealing with this subject, Mr. H. Hamlyn said every farmer who had a liking for sheep should have a flock of ewes and produce early fat lambs for the city or export markets. In the past the weight of an ideal freezing lamb had been between 35lbs. and 40lbs., but with the increased demand for meat that weight might well be increased. If the producers could put good prime six-months'-old lambs on the market weighing 50lbs. and over they would find a ready sale. To secure such lambs, good seasons would have to be experienced, otherwise a good deal of forced feeding would be necessary.

COWELL BROS. & COY.,
LIMITED.

Timber Merchants.

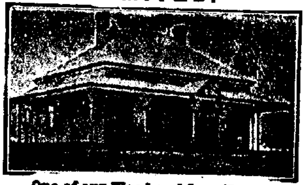
Wood and Iron Houses a Specialty.

ADELAIDE: Victoria Square.
PORT ADELAIDE: New Dock.

Wholesale Ironmongers.

Estimates and Price Lists on Application.

HEAD OFFICE: PARADE, NORWOOD.



One of our Wood and Iron Houses (from a photo.)

Fence Droppers, Sheep Gratings, Wool Tables, Beehives, &c.

CHARLES WHITING,
GRAIN AND PRODUCE MERCHANT,
NO. 2, CENTRAL MISSION BUILDINGS, FRANKLIN STREET, ADELAIDE.
CASH BUYER OF
WHEAT, OATS, BARLEY, PEAS, CHAFF, &c.

Special attention devoted to Sale and Purchase of Best types of Wheat, Oats, Barley, Lucerne, Rape, Sudan Grass, and other Cereals.

One of the factors of success was that the farmer should study local conditions, and so arrange the "drop" that the life of the lambs would include the best five or six months of the year. It was a mistake to keep the lamb after the good feed had gone or to sell it while the best months still remained. It would pay the farmer not to worry so much about the fluctuations of the market, but to devote more attention to the maturity of the lamb. Particularly was that so when working upon an export basis. The class of lamb to breed depended very largely on the class of country on which the sheep were raised. Anywhere in the southern districts, where an average fall of rain of not less than 20in. was received, he favored the long-wool crossbred ewe. She had a good frame, strong constitution, and plenty of milk. She was also prepared to defend her lamb against dogs or foxes, a point that should not be overlooked where foxes were numerous. For the sire he expressed a preference for the Shropshire. From that cross a short-legged, square-built, firm-fleshed lamb, that would stand an adverse season, and ripen well to the right weights, would be received. The lambs should be dropped in May or not later than June. After the lamb was three or four weeks old, tailing should be performed with the searing iron, as that method would reduce bleeding to a minimum, and would not weaken or check the growth of the lamb. On a farm on which fodders were grown for fat lamb raising, the first feed for the ewe and lamb would probably be an early-sown crop of barley, later on an oat crop, and then rape or lucerne field, and finally a crop of peas. Portion of the pea crop could be cut and stacked for future use. If the latter plan was not adopted the lambs could be turned into the paddock, peas being a splendid food to top up the lamb for market. In feeding such fodders it was essential that the farmer should realise the importance of a change of food. The change should not be obtained by shifting the sheep each week or so; that often did more harm than good, especially with regard to a rape crop. The changing, if possible, should be done daily. If some pasture land was available, and the sheep were allowed to feed there through the night and morning, and were then placed upon the rape during the afternoon, much more feeding value would be obtained from the crop, and the sheep would be less liable to suffer from bloat or scouring. Plenty of fresh, good water was also needed. If the paddocks were systematically laid out the daily moving of the flock, while upon rich fodder, could be carried out with little loss of time. The question of weaning was a topic for much discussion. Many producers asserted that a weaned lamb would never make the same quality of meat, and that it would be badly checked in growth. That, however, was not borne out by experience. If the lamb was to be sold at 4½ months it was certainly better to sell it direct from the mother; but if the object in view was to sell a 50lbs. to 60lbs. lamb, which meant holding it for six months or over, weaning would be the better method. To grow lambs to such heavy weights the feed should be good, and if the ewe was kept on good feed all the while, not only would much valuable fodder be consumed, but the ewe would become too fat. By weaning the lamb at four months only half of the number would require to be highly fed. The ewes could be placed upon short feed, and the lambs given the first pick of all the best fodder. If the feed was good the lambs would receive scarcely any check as the result of weaning. The slight check would be more than compensated for by the extra amount of high-quality food available. If the fodder crops were heavy, particularly with rape or lucerne, it was better to "bait out" with hurdles or netting portions of food sufficient for a day or two. That would save the great waste that would be caused by the sheep tramping over the fields, and would result in each portion being cleaned up in turn. The erection of the feeding pen was only a short task, and would be well repaid, provided that the fodder was sufficiently luxurious.

ROCKWOOD.

January 8th.—Present: 21 members.

Apple and Pear Growing.—In the course of a paper under the heading "Fruit Growing," Mr. H. Green expressed the opinion that there was a considerable area of land in that district suitable for fruit growing, and that there was a promising outlook for the grower, if good varieties were planted. By making use of cold storage, apples could be kept right on through the season until the early glut was over and prices became firm. There was also the export trade that would relieve the local market. Any land, with a good open clay subsoil, was suitable for apples or pears. The land should be cleared, ploughed deeply, and worked into good condition. If the land could be worked up the year before planting, so much the better. The land could not be worked too much prior to planting. A thorough working of the soil gave the tree a better chance if a dry spell was experinced when they were planted. If the soil was well and deeply tilled it would not be necessary to take out a larger hole for planting the tree than that demanded by the size of the roots. In describing the method of planting, the paper read as follows:—Break up the bottom of the hole as deeply as possible, and leave the soil a little higher in the centre. Shorten back the roots, and cut away all bruised portions with the secateurs, mix two or three handsful of bonedust with the soil. Put the tree in the centre of the hole, fill in a little soil and then tramp it in, lightly draw the tree, then fill in the rest of the hole, and have the soil slightly higher around the tree than the surrounding ground, so that the water will not make the soil sodden. Plant the tree slightly deeper than it was in the nursery. In planting, put the trees 20ft. by 18ft., this will take 110 trees to the acre. Continuing, the speaker said after planting, the young trees should be pruned. Cut out the inside limbs to give an open tree. About four leaders should be left, these being cut back to about 4in. or 6in. from the stock, making the cut to an outside bud, so that the tree would always make an outward growth. Trees of one variety should not be planted in a plot by themselves, but in alternate rows, so that they would cross fertilise. It was a well established fact that the cropping qualities of certain trees were greatly improved by cross pollenisation, so that it was important to plant varieties that bloomed at the same time close to one another. The following varieties, in order of blooming, were recommended by the writer:—Early blooming apples—Jonathan, King David, Delicious, Rokewood, Statesman. Late blooming apples—Glengyle Red, Rome Beauty, London Pippin. Varieties of pears—William's Bon Chretien (commonly known as Duchess), Packham Triumph, and Beurre Bosc. The most injurious disease of apples was black spot, and the worst pest codlin moth. Both, however, could be controlled to a great extent by spraying with arsenate of lead—1lb. to 25galls. of water—applied when the petals were just commencing to fall. If black spot was prevalent a mixture of Bordeaux mixture and arsenate of lead should be used.

Fruit Growing.—Mr. C. D. Scott also read a paper dealing with this subject, in the course of which he said the land selected for the orchard should have a good clay subsoil, not more than 18in. beneath the surface soil. The land should be ploughed to a depth of 8in., worked down to a fine tilth, and then pegged out in rows 20ft. apart. The holes for the trees should be square and taken out to the depth of the clay subsoil, which should be loosened, but not removed. Two petrol tins full of well-rotted stable manure and a little earth should be placed in the hole prior to the planting of the tree. Pruning should be regularly and carefully carried out. The speaker considered it a mistake to mix the different trees when planting. Apples, pears, plums, &c., should be planted in separate rows, and if the varieties were planted in correct order the labor involved in spraying and picking would be considerably reduced. After the trees had made a good growth, it was a good plan to run small pigs in the orchard when the fruit was ripe to eat the windfalls. That would save a good deal of waste and check, to a certain extent, the spread of codlin moth. It was also a good plan to plant peas between the rows of trees. These could be used to fatten pigs for market, and then ploughed into the soil to act as a green manure. One of the most important points in the success of the orchard was to secure trees true to type from a reputable nurseryman.

CHERRY GARDENS, December 9th.—The annual social of the Cherry Gardens Branch of the Agricultural Bureau was held in the local hall on Saturday evening, December 9th. There was a good attendance of members and visitors, and members from the Blackwood and Clarendon Branches also attended. The evening was devoted to musical and elocutionary items, speeches, and indoor games, supper being provided by the ladies of the district.

CHERRY GARDENS, January 2nd.—The subject for the evening was the concluding portion of the report of Mr. D. McRicks, who attended the 1922 Winter School for Farmers at Roseworthy Agricultural College.

KANGARILLA, December 1st.—The Government Dairy Expert (Mr. P. H. Suter) attended the meeting and delivered an address, "Dairying."

MEADOWS, December 6th.—The Secretary of the Advisory Board of Agriculture (Mr. H. J. Finnis) attended the meeting and delivered an address, "The Work of the Agricultural Bureau," to a gathering of 30 members and visitors.

MOUNT PLEASANT, December 8th.—The monthly meeting of the Branch was held at Mr. P. Miller's homestead, when Mr. T. Thompson, on behalf of the Branch, presented Mr. Miller with a life-membership certificate of the Agricultural Bureau. Messrs. Tapscott and Virgin also spoke, and referred to his sterling work that Mr. Miller had performed for the district and the Mount Pleasant Branch of the Agricultural Bureau. Mr. Miller suitably replied. Supper was provided by Mr. Miller.

MOUNT PLEASANT, January 11th.—Mr. T. Thompson initiated a discussion on the subject "Fighting Bush Fires." Members agreed that it would be a good plan if several capable men in the district were appointed to take charge of the fighting operations in the event of any outbreaks of fire.

RAPID BAY.—At a meeting held on January 6th, the Hon. Secretary (Mr. Geo. G. Cant) read extracts from the Departmental Bulletin, "Common Trouble of the Cow," and an interesting discussion ensued. Samples of lucerne, parsnips, and rhubarb, grown by members, were on view and were favorably criticised by those present.

AGRICULTURAL BUREAU CONFERENCE.

MID-NORTHERN DISTRICT.

The Annual Conference of Mid-Northern Branches of the Agricultural Bureau is to be held at Laura on Wednesday, March 14th. Sessions: 10.30 a.m., 2.15 p.m., and 7.30 p.m.

The Minister of Agriculture (Hon. G. F. Jenkins, M.P.) has been invited to attend and address the gathering. Papers will be read by Branch members, and lectures delivered by officers of the Department of Agriculture.

THE JOURNAL

OF THE

Department of Agriculture

OF SOUTH AUSTRALIA.

No. 8. MARCH 15, 1923. VOL. XXVI.

Published Monthly by the Department of Agriculture.

Edited by H. J. FINNIS.

CONTENTS.

	PAGE.
POINTS FOR PRODUCERS	686 690
INQUIRY DEPARTMENT	691–694
DEPARTMENTAL DOINGS	695
ROSEWORTHY AGRICULTURAL COLLEGE HARVEST REPORT, 1922-1923	696–718
PRUNING COMPETITIONS ON RIVER MURRAY IRRIGATION SETTLEMENTS	719-721
ORCHARD NOTES FOR SOUTHERN DISTRICTS	721
ANALYSES OF ARSENATES OF LEAD	722–723
ANALYSES OF FERTILIZERS	724–725
RIVER MURRAY HERD TESTING ASSOCIATION	726
MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION	727
ADVISORY BOARD OF AGRICULTURE	728 730
THE AGRICULTURAL OUTLOOK	731
DAIRY AND FARM PRODUCE MARKETS	732
RAINFALL	735 736
AGRICULTURAL BUREAU REPORTS	737 780

All communications to be addressed:
"The Editor, Journal of Agriculture, Victoria Square, Adelaide."

Any person may reproduce or republish any of the articles contained herein, provided that an acknowledgment is made that the article appeared in the *Journal of Agriculture* and the author's name is also acknowledged.

G. F. JENKINS,
Minister of Agriculture.

POINTS FOR PRODUCERS.

Copper Carbonate for Bunt Treatment.

The presence in Australia of the fungus which causes the disease of wheat known as bunt or stinking smut, has rendered it necessary for wheat growers to treat their seed-wheat with some fungicide as a preventive measures against infection. The substances which have been utilized generally for this purpose are bluestone (copper sulphate) and formalin. Under normal conditions, and when properly applied both these substances give satisfactory results. Objections, however, have been raised to the use of these fungicides. In the case of bluestone, it has been demonstrated that it affects the germination of the grain that has been injured in harvesting operations (a not infrequent happening in South Australia), and in the case of formalin, it has been urged that adulteration is so difficult to detect by the farmer, that his efforts are liable to be rendered nugatory on account of the use of inferior material. Recently, attention has been directed to the possibilities of copper carbonate as a method of controlling the bunt fungus. It is claimed that by dusting the seed with this substance, any bunt spores attached to the grain can be destroyed, and the treatment is not attended by the disadvantages associated with copper sulphate when applied to grain that has been injured in harvesting operations. In order to test the claims made on behalf of this substance, the Department of Agriculture has imported a quantity of specially prepared copper carbonate. This will be tested during the coming season on the Experimental Farms in different parts of the State, and the results will be made available for public information.

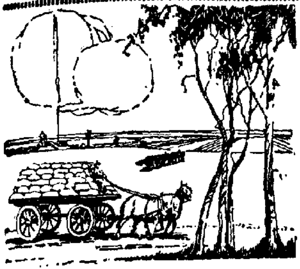
Tetraphosphate.

In continental countries, considerable interest has recently been taken in a new form of fertilizer known as Tetraphosphate. It is a phosphatic fertilizer which, it is claimed, can be manufactured more simply and economically than is the case with other forms. It consists apparently of natural phosphate roasted to temperatures of 600deg. to 800deg. centigrade, in admixture with carbonate of sodium, carbonate of calcium, magnesium, and sulphate of sodium. It is stated to contain phosphoric anhydride at the rate of about 14 to 15 per cent. Owing to its basic nature it is assumed that this fertilizer may be used with advantage in districts of heavy rainfall, with soils tending to acidity. The Department of Agriculture has imported a small quantity of this fertilizer for the purpose of testing its effect, principally in the South-Eastern portions of the State.

Agricultural Conferences.

Five country conferences of the Agricultural Bureau are to be held in this State during the next three months. The first of these is to take place at Laura on Wednesday, March 14th, at which centre delegates representing the Branches situated in the Mid-Northern area

STERLING FARM TRUCK



A Handy & Inexpensive Farm Truck for All Farm Hauling Purposes

The Sterling Farm Truck is the most convenient vehicle ever designed for use on the farm. It is particularly useful because of the many purposes for which it can be used. It is suitable for all kinds of farm work and can be used for carting timber, &c.

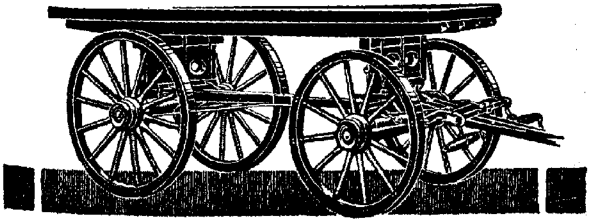
The under carriage is well made and heavily ironed, and the truck may, when used for such work as timber carting, be shortened or lengthened to any distance within the range of the extension bar.

The wheels are strongly constructed of carefully selected and well seasoned material, and track 5 feet wide. The front wheels are 40 inches and the rear wheels 44 inches in diameter, fitted with 4-inch tyres.

The truck is made in two sizes, with carrying capacities of 4,500lbs. and 6,000lbs. respectively, and is regularly equipped with table top, brake, pole, neck yoke, and trees, but single or double shafts will be furnished when required, at slight extra cost.

See the I.H.C. local agent for full information, or write us direct for same.

International Harvester Company of Australia, Pty., Ltd.,
113, 114, North Terrace, Adelaide.
Agents Everywhere.



will meet. This is to be followed by a gathering of representatives of the Yorke Peninsula Branches which will take place at Minlaton on April 11th, and the Lower Northern Branches Conference, which is fixed for April 19th, at Williamstown. On May the 2nd, the South-East Branches are to meet at Kalangadoo, and the River Murray Branches will send representatives to Renmark to spend the 22nd and 23rd of May in conference. During recent years, the number of annual country conferences of the Agricultural Bureau has been multiplied considerably, and farmers are placing more importance on these gatherings as opportunities of bringing them into touch with officers of the Department of Agriculture, and providing facilities for the exchange of opinions on matters of agricultural importance.

Smyrna Figs.

The harvesting of the Smyrna figs at the Government Experimental Orchard at Berri began early in February. The quality of the fruit promises to be well up to that of former years, whilst the quantity in sight indicates a heavier harvest than has previously been gathered. This is to be expected on account of the increasing age of the trees. Interest in the figs which have been grown and dried at the Berri Experimental Orchard appears to have been widespread, for inquiries have been received for supplies from Ceylon and elsewhere.

Chaff Legislation.

Since the introduction of the Chaff Act of 1922, it has become apparent that purchasers of small quantities of chaff are in some instances under a misapprehension as to the requirements of the Act in respect to the sale of bags with the chaff. There is reason to believe that many think that they are compelled by the Act to buy the bags as chaff. This is not the case, however. The Act provides that it is only necessary for the buyer of the chaff to purchase the bag when no other arrangement is expressly made between the purchaser and the seller. The Horticultural Branch of the Department of Agriculture, which is responsible for the administration of this Act, states that it appears that the Wholesale Chaff Merchants Association decided not to buy back bags in lesser quantities than five dozen at a time. This is purely an arrangement amongst some of the chaff sellers, and not a stipulation of the Chaff Act.

Frozen Pork.

The General Manager of the Government Produce Department has received the following cable from the Trade Commissioner in London (Mr. R. M. K. Lewis), dated Febuary 7th, 1923:—"The principal supply of frozen pork on the English market is now coming from the Argentine, and in quality is about equal to New Zealand and Australian pork that has been placed on this market of recent years. The wholesale prices being received are:—Good quality hogs under 100lbs. 8d. lb. gross; 101/120lbs. 7½d. lb. gross; over 121lbs. 7d. lb. gross. At these prices the trade is slow, the demand is centred in the best quality. There is a downward tendency in prices." The General

Manager states that this information was asked for by the Department because at present there is a plentiful supply of pigs in our local markets, and it was hoped that an export trade might help to prevent any glut, but as the English prices are only about equal to those ruling locally, and the cost of treating, freight, and selling charges is 3d. lb. the present prospects of establishing an export trade are not encouraging. To compete with other countries for a share of the English trade, either in frozen pork or bacon, it is necessary to profitably produce pigs under normal conditions at 5d. a lb. dressed weight, and it is generally believed that this is impossible at present. The Department, however, is prepared to continue its inquiries or treat pigs on owner's account, should any producers desire to further investigate the business.

Manurial and Wheat Variety Tests at Butler.

For some years Mr. C. F. Jericho, of Butler, acting in conjunction with the Department of Agriculture, has been carrying on two series of experimental plots. The object of one of the series is to discover the most profitable dressing of superphosphate to apply to wheat crops in the district, and the other is to provide an opportunity of comparing the returns secured from different varieties of wheat on bare fallow. The manurial plots were commenced in 1916. They are permanently pegged, and each time an individual plot is sown with wheat it is dressed with the same quantity of manure as it received formerly, a practice which does away with any chance of a plot receiving any benefit from residual fertilisers to which it is not entitled. There is also the advantage that the more frequently the plots are cropped, the better they should show the effects of the different manurial dressings. During the 1921-22 season the plots were sown with Gluyas wheat at the rate of 60lbs. per acre. The yields for the season were as follows:—

	Bush.	Lbs.
No manure	7	52
½cwt. superphosphate	12	52
1cwt. superphosphate	15	19
2cwts. superphosphate	17	28
3cwts. superphosphate	18	8

For the past seven years the average return from these plots has been as follows:—

	Bush.	Lbs.
No manure	10	52
½cwt. superphosphate	15	25
1cwt. superphosphate	17	48
2cwts. superphosphate	21	26
3cwts. superphosphate	22	32

The outstanding feature of these plots is the progressive increase of yields secured as a result of increasing the dressings of superphosphate up to 3cwts. per acre, which quantity has on the average for a period of seven years returned 11bush. 37lbs. per acre per annum above the yield secured from the plot receiving no manure. In the variety plots six different wheats were grown. They were sown at the rate of

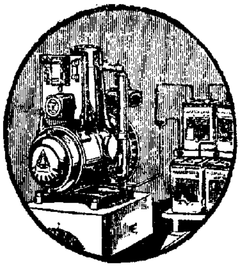
60lbs. of seed per acre, and received a dressing of 2cwts. of superphosphate per acre. The returns for the season just closed are as follows:—

	Bush.	Lbs.
Early Gluyas	17	30
Caliph	15	53
Ford	15	42
Late Gluyas	15	34
Felix	14	3
Sultan	13	56

Of these varieties, Gluyas and Caliph have been grown regularly in these plots for the past six years. The average annual yield of the former for the six years has been 18bush. 10lbs., and that of the latter 15bush. 44lbs. All of these wheats, with the exception of Gluyas, were bred at the Roseworthy Agricultural College.

Blackwood Experimental Orchard.

During the fruit season many horticulturists make a practice of visiting the Government Experimental Orchard at Blackwood, for the purpose of noting the habits and characteristics of different varieties of fruit. This institution affords an excellent opportunity for this, because of the fact that it includes specimens of approximately 1,650 varieties of apples, 1,000 varieties of pears, 400 varieties of plums, 400 varieties of peaches, 100 varieties of nectarines, 137 varieties of figs, 220 varieties of cherries, 50 varieties of almonds, 40 varieties of olives, 45 varieties of persimmons, and 112 varieties of citrus. Practically all of these have now reached the fruiting stage, a fact which, in a measure, accounts for the increase of public interest in the institution. Amongst the tests being carried out are stock trials (with cherries, pears, and peaches), tillage, pruning, and manuring tests. In addition to Branches of the Agricultural Bureau, a number of which have visited the orchard this season, fruitgrowers' organisations and private individuals have likewise inspected operations carried on there. On February 17th members of the Cherry Gardens and Longwood Branches of the Agricultural Bureau, to the number of about 40, made a tour of inspection of the orchard, under the guidance of the manager (Mr. R. Fowler). Other similar bodies are about to pay visits in the near future.



DELCO-LIGHT
The complete Electric Light and Power Plant
USED IN EVERY CLASS OF HOME, BUSINESS AND PUBLIC BUILDING.
25 MODELS. PRICES FROM £110 0s. 0d.
TOTAL SALES, 400.
The S.A. Government have now Purchased 80 Delco-Light Plants.
Catalogue, Advice, Prices—Free.
S.A. Distributors—
PARSONS & ROBERTSON, Ltd., 87, Worando Buildings, Grenfell Street, Adelaide.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by C. A. LOXTON, B.V.Sc., Government Veterinary Surgeon.]

"P. O'B.", Tothill's Creek, has mare with a scratch on the eyeball.

Reply—A suitable dressing may be made as follows:—Iodoform ointment, 1 part; vaseline, 5 parts; mix. Apply daily a small quantity, about as large as a pea. Place within the lower lid. Hold the lids together until the ointment melts and is distributed over the eye.

"M. M.," Frances, has horse with a hard lump near the point of the shoulder.

Reply—Your best course is to apply a smart blister the next time the swelling appears. This will probably cause an abscess to develop, which should be evacuated as soon as pus can be detected. Use the following blister:—Red iodide of mercury, 2 drams; lanoline, 1oz. Rub it in well for five minutes. Tie the horse's head up short for an hour after blistering. If you can feel any fluctuation in the swelling after blistering you should open it with a clean, sharp knife in such a manner as to drain it effectively. Keep the wound clean and dress with disinfectant lotion.

"C. H. C.," Wirrabara, reports blood mare with a recurrent swelling in the throat region, followed by swelling along the belly.

Reply—It is probable that she will develop an abscess in the throat region such as occurs in strangles. In the absence of the usual accompanying symptoms of the latter trouble, however (fever and catarrh), the condition may arise from the penetration of a grass seed, a frequent cause of abscess formation in the throat. The doughy swelling along the belly does not call for any special treatment. Put her on light laxative diet. Give her cooling medicine:—Epsom salts, 12ozs.; saltpetre, 1½ozs.; mix. Divide into 12 powders. Give one twice daily in the feed or drinking water. Do not drench her. If she has any difficulty in swallowing give her:—Extract of belladonna, ¼oz.; chlorate of potash, 1oz.; treacle, 4ozs.; mix. One tablespoonful on the tongue twice a day. You can foment the swelling of the throat if it is at all hot or painful. If the abscess forms it may be opened with a clean, sharp knife. Put her in a small yard during the day so that she can get a little exercise.

"W. B. H.," Bletchley, asks cure for pony with the strangles.

Reply—The pony should be isolated, put on light, easily-digested food, mashes, etc., and should receive a little cooling medicine daily:—Epsom salts, 1oz., and saltpetre, one level teaspoonful. This may be given in the food or drinking water. When the abscess under the jaw forms it should be opened and drained, and kept clean with a little disinfectant solution. If the discharge from the nostrils is troublesome, some inhalations of steam are useful and may be given for a quarter of an hour at a time. A little eucalyptus oil or Friar's balsam may be added when steaming the head.

"H. H. W.," Keith, has pony with wound 18 months old on the inside of the hock.

Reply—I recommend you to continue daily dressing with warm water and washing soda and afterwards dust it liberally with a dry wound powder such as zinc oxide. If there is a tumor-like mass of proud flesh it requires surgical treatment.

"P. H. K.," Currency Creek, asks treatment of distemper in dogs.

Reply—For the ordinary uncomplicated form of distemper in dogs give aspirin, 5-grain tablet, three times a day for three or four days, followed by quinine salicylate, 5 grains, in pill or powder three times daily. Place patient in a dry, well-ventilated place, free from draughts, and supply nutritious and easily-digested food.

"J. F. D.," Meningie, asks (1) is rickets in pigs a contagious disease, and (2) reports three-year-old filly with no hair on her tail.

Reply—(1) Rickets in pigs. This disease can be prevented by providing balanced ration, plenty of room for exercise, and a clean, dry, well-ventilated lairage. When the disease occurs, the first consideration is an inquiry into the feeding. Give a dose of laxative medicine, followed by tonic condition powders and bonemeal, one teaspoonful daily in the feed. (2) Three-year-old filly without hair on tail. Cause, probably some parasitic skin disease. Apply sulphur ointment made by mixing thoroughly one part of sulphur to four of lard. Wash the tail with warm water and soap. When dry apply ointment and rub in a small quantity daily with plenty of friction. Wash off in a week and apply some mild stimulating preparation, such as tincture of cantharides, 1 part, and soap liniment, 8 parts; mix.

"A. E. W.," Kingscote, reports horse, eyes dull and appear to be deeply sunken into the head, legs swollen, and the animal very seldom lies down. When the horse turns about to look at any object the eyes seem to be half covered with a film.

Reply—He is suffering from a subacute form of tetanus. You should put him in a loosebox or shed which is kept darkened, and disturb him as little as possible. Do not drench him with medicine. Give him 3ozs. or 4ozs. of Epsom salts daily in his feed or drinking water. Give him plenty of good, nourishing food and sufficient mash to keep his bowels relaxed. Place his food and water at a convenient level so that he can reach them easily. As he improves you can give him the run of a small yard or paddock.

"W. G. T.," Monash, reports three-year-old filly lame, with a bony enlargement on the coronet.

Reply—There is no cure for this enlargement. You may, however, be able to relieve the lameness. If there is now no heat in the swelling you should apply a little red blister, made by mixing thoroughly 1 dram of red iodide of mercury with 1oz. of lard. Clip the hair off first. Apply the blister with smart rubbing for 10 minutes. Tie the filly's head up short for an hour after the application, so that she cannot reach it with her teeth. It is probable that she will be of no further use for continuous road work.

"W. G. B.," Farrell's Flat, has foal with swollen sheath. The swelling rises and subsides at frequent intervals.

Reply—The character of the swelling suggests that the foal has a scrotal rupture. Do not interfere with it at present. It will probably disappear as the foal gets older.

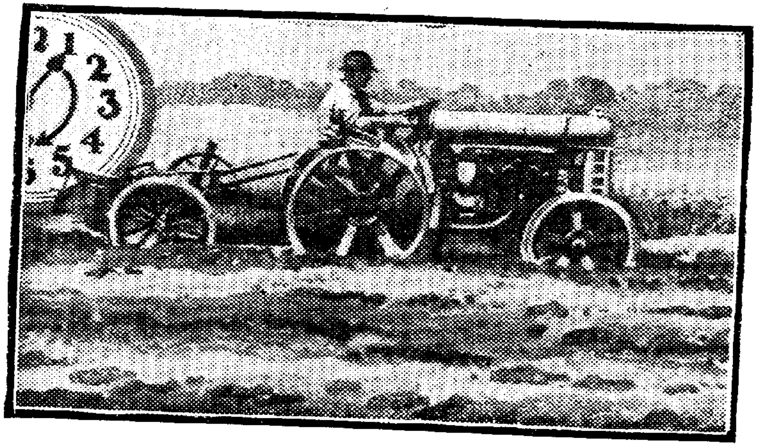
"R. A. W.," Coomandook, asks how much salt to the gallon can water contain and yet be given safely to stock.

Reply—Horses will tolerate up to 1oz. common salt per gallon; cattle, 1½ozs.: sheep, 2ozs.

"T. F. G.," Glencoe East, reports mare with chronic catarrh.

Reply—The cause of the trouble should first of all be ascertained. It may be due to disease of the lining membrane or bone of the nasal chambers (nasal gleet), in which case it will require surgical treatment. You can, however, try some simple treatment, such as medicated inhalations of steam, using a little Friar's

Work the Clock Round with a FORDSON TRACTOR!



It will pay to investigate the

FORDSON

FARM

TRACTOR

TIME SAVED MEANS PROFITS EARNED.

The striking advantages of the FORDSON is that ploughing and most of the preliminary operations of wheat cultivation, if necessary, can be carried on the whole 24 hours of the day. Besides operating ploughs, harrows, harvester, and seed drills, it can be profitably used for such work as threshing, chaff cutting, water pumps, wood sawing, also for hauling, but, of course, on this score, cannot compete with the FORD ONE TON TRUCK for general haulage work, such as conveying produce to the market.

S.A.
Distributors, **DUNCAN MOTORS LIMITED,** FRANKLIN STREET,
ADELAIDE.

balsam at each inhalation, and a good tonic, such as the following:—Reduced iron, 3ozs.; powdered nux vomica, 1oz.; mix. Divide into 24 powders. Give one twice daily in the feed.

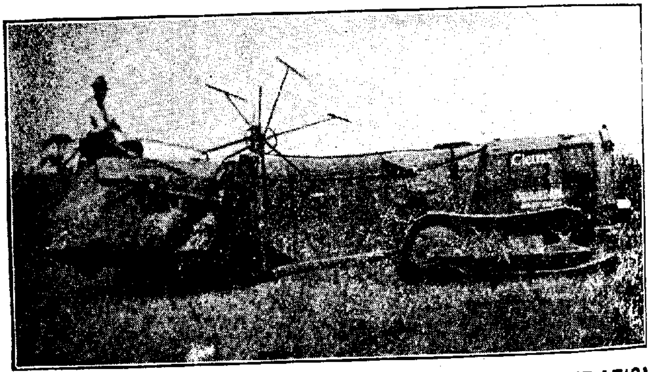
"B. E.," Verran, asks:—(1) Will milk and honey remove sand in horses? (2) What can be used to cure large lump on the point of the shoulder of a horse? (3) Mare after having been kicked in the chest, drags her front legs on the ground when made to "back."

Replies—(1) Yes; any laxative is useful for the purpose. (2) Apply a little red blister. This will probably cause the development of an abscess, which should be opened when mature, kept clean, and dressed with antiseptic lotions. If this course is not effective it requires surgical removal. (3) The mare appears to have a nerve trouble following the injury to the chest. No treatment can be recommended. If she is not showing some improvement some weeks after this symptom appeared the prognosis is unfavorable.

"H. H. and C. L. T.," Borrika, report mare, four years, with a lump on the jaw from which there is a chronic discharge.

Reply—You should scrape the cavity out and dress it with tincture of iodine. It will be necessary to syringe it out daily with disinfectant solution by means of a syringe with a fine nozzle. Use carbolic acid, lysol, or izal, one tablespoonful to a pint of water, and occasionally use a little zinc chloride, 1 in 10, instead of the usual disinfectant. Bathing the external wound is not sufficient. It would be advisable to examine the teeth in the region of the swelling if you can obtain a mouth gag. Such conditions often lead to loosening of the teeth, though this does not appear to have taken place in the case of this mare, as she is feeding normally.

The CLETRAC TANK-TYPE TRACTOR
WITH THE CLETRAC LINE-DRIVE.



MAKES A ONE-MAN'S JOB OF ALL FARMING OPERATIONS
FOR ECONOMY, SIMPLICITY, AND POWER, CLETRAC TRACTORS
FEAR NO RIVAL.
AN IDEAL TRACTOR FOR ROUGH, SNAGGY COUNTRY.
SOLE AGENTS—
CHARLES ATKINS & CO., LTD.,
CURRIE STREET, ADELAIDE.

DEPARTMENTAL DOINGS.

The Director of Agriculture (Professor Arthur J. Perkins) during February visited the irrigation areas at Berri, Glossop, and Chaffey, in company of the Minister of Agriculture (Hon. G. F. Jenkins, M.P.). The Director also visited Marion.

HORTICULTURE.

During the month of February the Horticultural Instructor (Mr. Geo. Quinn) visited blocks in the Berri, Winkie, Glossop, Loveday, Chaffey, Block E, and Renmark irrigation areas. Mr. Quinn also visited the districts along the River Torrens from Athelstone to Fulham, including Marion, to collect samples of irrigation water from wells that have been in use for many years, in connection with investigations that are being carried out to ascertain the qualities of water used for irrigation on the plains of Adelaide. In conjunction with delegates of the Australian Dried Fruits Association, Mr. Quinn visited Mildura to fix grades of dried fruits, with a view to forming regulations in connection with the export of dried fruits.

Mr. C. H. Beaumont (Orchard Instructor Southern District) attended a homestead meeting of the Rockwood Branch of the Agricultural Bureau.

DAIRYING.

The Assistant Dairy Expert (Mr. H. J. Apps) delivered addresses to the Williamstown and Currency Creek Branches of the Agricultural Bureau, and visited dairymen in the Lyndoch, Salisbury, Bolivar, Goolwa, and suburban areas.

GENERAL.

On February 2nd, Mr. L. Cowan, B.Sc. Agric. (member of the Advisory Board of Agriculture) visited the Balhannah Branch of the Agricultural Bureau, and delivered an address on "Rearing Calves."

The Secretary Advisory Board (Mr. H. J. Finnis) addressed meetings of farmers at Mount Schanck and Allandale, both of which centres have decided to establish Branches of the Agricultural Bureau. This officer also attended a meeting of representatives of Branches of the Agricultural Bureau on the River Murray, held at Barmera, to discuss arrangements for pruning competitions to be held on the irrigation settlements.

ROSEWORTHY AGRICULTURAL COLLEGE HARVEST REPORT, 1922-23.

[By W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S., Principal Roseworthy Agricultural College.]

Although it cannot be claimed that the past season was a favorable one for grain crops, it certainly conduced towards heavy yields of hay and green fodder. All early sown crops harvested prior to or soon after the flowering gave heavy returns, but relatively few of the late sown cereals were a success, either as hay or grain crops. It is not always an easy matter to account satisfactorily for the behavior of our crops under varying climatic and soil conditions. The difference in yield appears at times to be out of all proportion to the slight variations in treatment and environment. In this instance, however, it seems very probable that the influence of climatic factors has been the chief determining factor. So far as the early growth is concerned, the conditions obtaining during the latter half of April and the greater part of May and June were all that could be desired, and with few exceptions germination was brisk and even. It was the July weather, however, that gave the first check to the young crops. It proved to be an exceptionally cold month, the reading of the terrestrial thermometer falling below freezing point on no less than 12 occasions. In addition to this, rain was recorded on 21 days, and in consequence the soil was maintained in a very wet, cold state for a protracted period. The early sown fields, however, had become well established by the end of June, and were vigorous enough to survive these untoward conditions, and ultimately to fulfil the promise given in their earliest stages.

The later sowings were less fortunate, and they showed their distress by turning color and marking time. The hardier weeds, such as cockspur and wild carrot, took full advantage of this, and outgrew the crops, which subsequently had to compete with them for root room and soil moisture.

The second feature of the 1923 season which militated against the ultimate success of our grain crops was the continuous series of high temperatures recorded in the month of October. After coming through a wet winter and a mild September, the backward crops that were struggling into ear were ill-prepared for such a sharp rise in atmospheric temperature, and in some of the College fields entire plants were destroyed through being unable to meet the increased demand for moisture consequent upon the heavier loss incurred through transpiration. This was particularly noticeable in some of the oat plots on stiff land, but it was also seen in the last sown wheat field. I attribute the fact that the average wheat yield for the College farm came out a little below the average almost entirely to these two factors, and I am fortified in this opinion by the very satisfactory returns obtained from early sown plots of late varieties.

In all other crops the seasonal average is above the mean return, and it will be seen from the following table that the difference is very appreciable in the case of silage and hay.

Table I.—*Showing Crop Returns for* 1922 *Comparatively with Mean Yields.*

Crop.		Mean Yield.			Average Yield, 1922.		
	Period.		Bush.	lbs.		Bush.	lbs.
Wheat	1904-1921		17	47		16	6
Barley	1904-1921		28	20		37	38
Oats	1905-1921		26	14		28	29
		T.	C.	L.	T.	C.	L.
Hay	1904-1921	2	0	51	2	8	9
Ensilage	1905-1921	6	13	9	8	7	59
Berseem	1912-1921	29	15	52	30	6	66

WEATHER CONDITIONS.

The general influence of the weather has already been referred to, but it will be well to examine the records in a little more detail in order to appreciate the conditions under which the crops herein referred to were grown.

The first point that will occur to a practical farmer is the state of the fallow as regards moisture. Data illustrative of this question are given below, and it will be seen that the fallow rains to be considered in relation to the 1923 crops were relatively light, being nearly 2¼in. below the normal for the preceding 38 years.

Table II.—*Showing Fallow Rains, August* 1*st of one year to March* 31*st of Succeeding Year, Together with the Corresponding Mean for* 38 *Years,* 1883-1921.

Season.	In.	Season.	In.
1904/1905	7.18	1913/1914	13.07
1905/1906	7.96	1914/1915	3.86
1906/1907	11.29	1915/1916	9.08
1907/1908	9.13	1916/1917	14.79
1908/1909	9.51	1917/1918	10.83
1909/1910	17.56	1918/1919	5.45
1910/1911	11.41	1919/1920	7.27
1911/1912	5.88	1920/1921	13.78
1912/1913	13.00	1921/1922	7.51
Means		1883/1921	9.70

The next important consideration is the distribution and amount of the rainfall during the year of growth. In Table III. are shown the monthly precipitations throughout the twelve months, as well as corresponding figures for the five immediately preceding years. The total fall was well above the normal amount, and the season must therefore be regarded as a moderately wet one. It must be pointed out, however, that the high total is due chiefly to an unusual downpour in December, when nearly 4in. was registered.

Reference to the column of mean figures will reveal the important fact that the winter and early spring rainfall was approximately 3in. above the average for the period 1883-1921, which bears out the previous remarks concerning the retarding influence of the continuously wet winter.

TABLE III.—*Showing Monthly Rainfall at Roseworthy College for Seasons* 1917-1922, *Inclusive, with the Mean Fall for each Month During the Period* 1883-1921.

	1917. In.	1918. In.	1919. In.	1920. In.	1921. In.	1922. In.	Means, 1883-1921. In.
January	0.58	0.24	0.28	0.27	1.80	1.02	0.80
February	2.12	0.26	2.50	0.00	0.52	0.08	0.62
March	0.96	0.88	0.00	0.86	1.01	0.10	0.86
April	0.68	0.83	0.24	0.69	0.20	0.90	1.53
May	3.98	2.55	1.49	1.47	2.94	3.59	1.83
June	2.17	1.22	1.07	4.44	1.95	1.73	2.58
July	1.92	1.36	0.66	1.12	1.43	3.75	1.81
August	2.60	1.83	2.00	3.01	1.21	2.19	2.06
September	3.00	0.48	1.87	1.62	2.04	1.32	1.82
October	1.72	1.88	0.83	2.53	1.56	1.40	1.65
November	1.18	0.38	0.05	1.88	1.65	0.02	1.09
December	0.95	0.10	1.39	1.41	0.85	3.90	0.80
Totals	21.86	12.01	12.38	19.30	17.16	20.00	17.45

TABLE IV.—*Showing the Distribution of "Useful Rain" in the Years* 1917-1922, *Inclusive, Together with the Means for the Previous* 39 *Years.*

	Seeding Rains. April-May. In.	Winter Rains. June-July. In.	Spring Rains. Aug.-Oct. In.	Summer Rains. November. In.	Totals. In.	Percentage of "Useful" to Total Rain. In.
1917	4.66	4.09	7.32	1.18	17.25	78.91
1918	3.38	2.58	4.19	0.38	10.53	87.68
1919	1.73	1.73	4.70	0.05	8.22	66.40
1920	2.16	5.56	7.16	1.88	16.76	86.84
1921	3.14	3.38	4.81	1.65	12.98	75.64
1922	4.49	5.48	4.91	0.02	14.90	74.50
1883-1921	3.36	4.38	5.53	1.09	14.35	75.64

In the final table on weather conditions are set out in condensed form the more important of the meteorological observations recorded at the College by Mr. F. E. Place, B.V.Sc., M.R.C.V.S. Not the least interesting feature of this table is the large number of frosts registered during, July, August, and September. Even as late as November 24th the temperature of the air in contact with the soil fell to 29deg. F.

BRUNNING'S--
HEADQUARTERS
FOR ALL
FARM SEEDS

Improve
Your Land
By Sowing
GRASSES AND CLOVERS

"Tarwei" Strawberry Clover
Berseem Clover
Machine Dressed Sweet Clover
Subterranean Clover
Creeping Bent
Cocksfoot
White Clover

Red Clover
Alsike
Italian Rye Grass
Perennial Rye Grass
Cluster Clover
Crested Dogstail
Cow Grass

FURTHER PARTICULARS, SAMPLES, AND PRICES ON APPLICATION.

BRUNNINGS

(F. H. BRUNNING PTY., LTD.,
64, ELIZABETH ST., MELBOURNE.

TABLE V.—*Showing Details of Weather for the Year* 1922.

Month.	Rain-fall. Ins.	No. of days on which rain fell.	Important Rains. Date.	Important Rains. Ins.	Minimum Temperature. Deg. F.	Mean minimum Temperature. Deg. F.	Frosts. Date	Frosts. Temp.	Maximum Temperature. Deg. F.
April	0.90	9	6	0.22	45.0	55.6	—	—	94.0
			26	0.24					
May	3.59	18	2	0.33	39.2	49.0	—	—	77.0
			3	1.36					
			5	0.20					
			6	0.41					
			28	0.30					
			30	0.38					
June	1.73	17	22	0.25	37.0	43.3	5	30.5	67.0
			29	0.21			7	29.0	
			30	0.46					
July	3.75	21	6	0.41	33.0	41.1	1	30.0	66.8
			7	0.65			2	28.0	
			8	0.32			3	31.0	
			16	0.35			4	27.0	
			17	0.74			8	31.8	
			21	0.34			22	31.0	
			22	0.20			23	30.0	
							24	29.0	
							25	27.0	
							26	31.8	
							29	29.0	
							31	32.0	
August	2.19	17	9	0.32	34.0	42.9	3	29.0	69.0
			11	0.41			4	31.5	
			12	0.28			5	28.0	
			16	0.26			19	31.0	
							20	31.0	
							22	30.0	
							23	27.5	
							29	29.0	
September ..	1.32	10	26	0.77	34.0	42.3	1	29.5	87.0
							3	27.0	
							7	28.0	
							8	27.5	
							9	27.5	
							12	29.0	
							15	29.8	
							19	31.5	
							20	28.0	
							21	27.8	
							22	27.0	
October	1.40	12	3	0.20	35.2	48.1	1	30.0	102.0
			24	0.29			5	30.0	
			29	0.24			6	29.0	
November ..	0.02	1	—	—	39.8	53.5	22	31.5	109.0
							24	29.0	
December ..	3.90	11	9	1.06	45.5	56.1	—	—	104.0
			19	0.94					
			25	0.37					
			26	0.38					
			28	0.22					
			30	0.60					

BERSEEM CLOVER.

The area under this crop was increased this year, in anticipation of the arrival of the Lincoln Red Shorthorns. The treatment given was the same as has been detailed in previous reports, and notwithstanding the fact that it was not always possible to arrange for the cutting to take place as soon as the crop was ready, the average over the whole area for the season worked out at over 30 tons of green stuff per acre. Results secured from the different plots under this crop are appended.

Table VII.—*Showing Yields of Berseem Clover (Trifolium Alexandrinum) at Roseworthy College, 1922.*

Date of Cutting.	Total Yield.			Yield per Acre.		
	T.	C.	L.	T.	C.	L.
Plot C (0.983 acres)—						
June 13-27	8	19	32	9	2	43
August 26-September 25	12	6	93	12	11	15
October 22-25	7	11	58	7	14	6
	28	17	71	29	7	64
Plot D (1.01 acres)—						
May 28-June 12	10	4	57	10	2	54
July 20-August 18	12	18	44	12	15	93
October 18-21	7	10	74	7	9	18
	30	13	63	30	7	54
Plot E (0.64 acres)—						
June 27-July 1	9	2	98	14	5	83
September 26-October 6	9	5	90	14	10	36
October 28-November 7	3	16	34	5	19	25
	22	4	110	34	15	32
Plot F (1.33 acres)—						
July 2-19	17	1	43	12	16	75
October 7-17	16	6	68	12	5	64
October 27-November 22	4	19	84	3	15	0
	38	7	83	28	17	28
Totals (3.963 acres)	120	3	103	30	6	66

Table VI.—*Summarising Returns from Irrigated Berseem at Roseworthy College, 1912-1922.*

Year.	"Useful" Rain.	Area.	Total Yield.			Acre Yield.		
	Inches.	Acres.	T.	C.	L.	T.	C.	L.
1912	13.05	1.190	38	12	56	32	9	18
1913	10.82	3.201	108	19	97	34	0	111
1914	6.12	2.294	46	16	94	20	8	43
1915	18.35	3.411	98	16	66	28	19	53
1916	20.25	4.643	165	1	48	35	11	6
1917	17.25	4.003	115	16	55	28	18	12
1918	10.53	3.693	107	18	93	29	4	64
1919	8.22	3.384	96	1	108	28	7	107
1920	16.76	1.368	39	7	21	28	15	48
1921	12.98	1.580	48	0	108	30	19	57
1922	14.90	3.963	120	3	103	30	6	66
Means						29	16	53

B

One of the directions given to prospective berseem growers is to apply plenty of seed. A seeding of 30lbs. per acre is generally advised, and unless that amount or more be sown, a test of the suitability of the plant for any particular district is regarded as inconclusive. For even when a fair measure of success has been attained, the full yielding capacity of the crop cannot be said to have been tested until a full quantum of seed has been sown.

With a view to obtaining local data on the question of the right amount of seed to sow, tests have been carried out on the College plots during the past two seasons, and the results obtained indicate that the advice previously given to inquirers was quite sound. It is apparent from the subjoined table that the yield increases steadily as the amount of seed advances up to 30lbs. Up to the present I have not carried the experiment beyond this limit, but I propose next year to include plots sown with 35lbs. and 40lbs. per acre. Berseem seed can usually be obtained locally for about 2s. per pound, and if we adopt this figure, the cost per acre in this series of plots will increase by 10s. for each additional 5lbs. of seed sown. For the first 5lbs. of extra seed a return of 30cwts. was obtained, and the cost of producing this will therefore amount to 4d. per cwt. Between the 20lb. and 25lb. plots the difference in yield is 2¼ tons, and by a similar calculation it will be found that this was obtained at a cost of 2⅔d. per cwt. Corresponding figures for the last additional 5lbs. of seed are 2¾ tons and approximately 2 1-10d. per cwt.

It is evident, therefore, that the practice of sowing a minimum of 30lbs. of berseem clover per acre is well founded. Maximum returns cannot be obtained otherwise, and with irrigated crops in particular, it is false economy to sow light in order to reduce costs.

TABLE VIII.—*Showing Yields of Berseem Clover obtained from Light and Heavy Seedings.*

Number of Cut.	Yield per Acre. 1921.			Yield per Acre. 1922.			Average Yields per Acre. 1921-1922.		
	T.	C.	L.	T.	C.	L.	T.	C.	L.
15lbs. of seed per acre—									
First cut	7	12	48	13	2	31	10	7	40
Second cut	9	8	51	12	11	13	10	19	88
Third cut	2	7	93	5	5	103	3	16	98
	19	8	80	30	19	35	25	4	2
20lbs. of seed per acre—									
First cut	7	17	23	13	3	107	10	10	65
Second cut	9	15	17	13	8	47	11	11	88
Third cut	2	17	45	6	6	13	4	11	85
	20	9	85	32	18	54	26	14	14

THE MOTOR ON THE FARM.

Time means money. This fact is acknowledged to-day without a protest, and the truth of the statement is recognised by no member of the community more readily than the farmer and pastoralist. Both these classes have of late years assumed their rightful place of importance in the commercial world—especially is this so in Australia, perhaps from the fact that primary production without any shadow of doubt forms the backbone of our existence. A bad season and the consequent lessened buying power of the country inhabitant is felt more by business people and importers than a disastrous year of any other class. The primary producer has realised this, and has taken greater interest in business generally.

It has been necessary for him to keep himself in close touch with the trend of the markets—he must visit the town centres more frequently than of old, and in this and many other ways the farmer particularly has calls upon his time, which makes it a matter of importance that he must save an hour here and an hour there. The cost of labor has become such an item that he cannot afford to have a hold-up on account of machinery breakdown, and in dozens of similiar incidents the need of dispatch is felt. No development of utilities has come more to the outback man's aid so much as the Motor Car, and this fact is being readily realised more and more. It is quite a common thing for the Motor Car to be regarded as part and parcel of the ordinary machinery equipment of the farm and station.

For a car to fill this great need it must be reliable and always at hand for immediate use. To make it profitable in use the car must be one easily maintained, able to perform in all sorts of country and over all conditions of roads.

The economy of running costs is another vital point in calculation, consistent with faithful performance.

There is a big field to choose from, but the buyer should carefully consider the public trials given. The farmer generally buys his implements upon results of field trials, and he must do the same with his car.

Undoubtedly, the most tried-out car on the market to-day is the Overland Light Four. Soon after its introduction into South Australia the distributors, Autocars Ltd., demonstrated its faithfulness in a five days and four nights non-stop run. Each of the two cars in this time traversed 4,348 miles, averaging over 30 miles to the gallon. Autocars Ltd. have always been keen on publicly demonstrating the car, and the jumping and stair-climbing exhibitions are still fresh in the minds of those who saw them. Selling at £335, and considering this and the wonderful service it gives, the Overland to-day represents the leading Motor Car value in South Australia. It is its first low cost and its economy in running that makes it so attractive. The Overland is well fitted up, being sold with five tyres and tubes—demountable rims, two-unit electrical system, magneto ignition, and many more such fittings which make it the ideal car for the farm. (Advt.)

TABLE VIII.—*Showing Yields of Berseem Clover obtained from Light and Heavy Seedings.*—continued.

Number of Cut.	Yield per Acre. 1921. T.	C.	L.	1922. T.	C.	L.	Average Yields per Acre. 1921-1922. T.	C.	L.
25lbs. of seed per acre—									
First cut	8	6	51	14	10	33	11	8	42
Second cut	12	5	60	14	10	20	13	7	96
Third cut	2	9	48	5	17	84	4	3	66
	23	1	47	34	18	36	28	19	98
30lbs. of seed per acre—									
First cut	8	0	9	16	6	51	12	3	30
Second cut	12	12	26	17	11	63	15	1	101
Third cut	2	12	69	6	7	14	4	9	98
	23	4	104	40	5	15	31	15	4

ENSILAGE.

The amount of silage cut this season, namely, 155 tons, has only been exceeded once since the beginning of the College records, in 1905. Following our usual practice, April-sown cereal crops were cut and chaffed into pits shortly after flowering. The work was carried out as expeditiously as possible, with a view to reduce to a minimum the chemical changes induced by protoplasmic activity and bacterial life. From the tabular statement it will be seen that the yield per acre was heavy, being 32cwts. above the mean tonnage for the preceding 17 years.

TABLE IX.—*Showing Yields of Ensilage*, 1905-1922.

Year.	Rainfall. "Useful."	Total.	Area. Acres.	Total Yield. T.	C.	L.	Yield per Acre. T.	C.	L.
1905	14.23	16.71	—	—			8	10	0
1906	16.31	19.73	9.50	113	1	0	11	18	0
1907	13.96	15.13	17.15	92	2	75	5	7	34
1908	15.52	17.75	17.00	129	10	76	7	12	44
1909	21.15	24.05	16.962	169	18	90	10	0	3
1910	16.79	23.87	15.490	134	1	43	8	15	32
1911	9.45	13.68	30.740	152	16	28	4	19	47
1912	13.05	14.97	40.700	141	4	73	3	9	45
1913	10.82	15.66	61.511	115	14	24	1	17	70
1914	6.12	9.36	—	—			—		
1915	18.33	19.76	27.384	153	14	107	5	12	33
1916	20.25	23.23	12.443	103	11	28	8	6	51
1917	17.25	21.86	9.176	77	18	84	8	9	98
1918	10.53	12.01	19.284	91	15	75	4	15	21
1919	8.22	12.38	59.436	116	12	101	1	19	28
1920	16.76	19.30	18.464	140	6	8	7	11	109
1921	12.98	17.16	19.607	141	19	47	7	4	91
1922	14.90	20.00	18.52	155	2	76	8	7	59
Means, 1905-1922							6	15	1

As a rule the bulk of our silage is made from early wheats, such as King's White or Caliph, but occasionally it has suited us better to utilise barley or oat crops instead. Definite information, however, as to the particular cereal or mixture of cereals best adapted for the purpose in this district has not hitherto been available. In order to test the matter, separate plots of wheat, oats, barley, rye, and mixed wheat and oats were sown last year, proved varieties being selected for the experiment. It may be asked why mixtures of cereals and legumes, such as wheat and pease or oats and tares, have not been included. The feeding value of such a mixture is undoubtedly higher than that of cereals alone, but the practice has not proved advantageous in our experience. So far as tares are concerned, the price per bushel is the chief stumbling block; but even if they were procurable at moderate rates, they would be open to the same objection as pease, inasmuch as they present a tangled mass of forage, which is difficult to bind, and harder to force through the chaffcutter. The plots harvested this year all yielded well, but since they represent only one season's trial, the results quoted must not be regarded as at all conclusive. Probably the early sown wheat crops will on the average yield more heavily than oats or barley, but I quite anticipate that some of the taller growing early oats—for example, Lachlan and Early Burt—will give more green forage per acre than any of our barleys. The mixture of wheat and oats came out about 9cwts. per acre better than wheat alone; but the fact that the former was grown on fallowed land and the latter on autumn ploughing is more than sufficient to account for the difference.

TABLE X.—*Showing Yields of Silage obtained from Plots of Cereals*, 1922.

Crop. Variety.	Yield per Acre. T.	C.	L.
Oats—Scotch Grey	6	17	53
Barley—Shorthead	7	0	43
Rye—Black Winter	7	8	98
Wheat—King's Red	8	4	41
Wheat—King's Red Oats—Scotch Grey	8	13	82

HAY HARVEST.

Owing to the large increase in the number of stock maintained on the College holding, it has been necessary of late years to devote larger areas to the growing of hay crops. During the last three seasons the College hay crop has averaged between 590 tons and 600 tons, the total amount hauled in this year being 647 tons 2cwts. 81lbs. Notwithstanding the large amount of labor entailed in the cutting stooking, carting, and stacking of this fodder, the farm staff and students worked with such enthusiasm that the last load was weighed in by the middle of December. Owing to a summer thunderstorm on the 9th of December, the work was interrupted for a day or so, and no doubt some of the soluble food constituents of the hay then in the field were lost; but on the whole the quality of the sheaves this year was good. The sight of so many hay-laden fields in the North during January and February of this year makes one wonder whether the extent to which hay depreciates under exposure to rain and vermin is fully appreciated. Tonnage should not be the chief factor in determining the value of hay; but, unfortunately, science has not yet advanced sufficiently to enable a standard of quality to be drawn up. The food value of hay, however, is usually reflected in the condition of the stock consuming it, and it would be well if those who have to fall back on impoverished, weather-worn fodder during the coming winter would remember to supplement the chaff ration with a larger amount of grain than usual.

The average yield per acre over the whole hay area—270 acres approximately—was 2 tons 8cwts. 9lbs., and in mentioning this result I should point out that the headlands of all the grain crops are included. These invariably cut light, owing to the proximity of trees and scrub, and in this instance they returned only 35cwts. per acre, as is shown in Table XII.

TABLE XI.—*Showing Average Hay Yields on the College Farm, 1904-1922.*

Year.	Rainfall. "Useful" Inches.	Rainfall. Total Inches.	Area Acres.	Total Yield. T.	Total Yield. C.	Total Yield. L.	Average Yield. T.	Average Yield. C.	Average Yield. L.
1904	11.60	14.70	93.000	238	0	0	2	11	22
1905	14.23	16.71	67.000	198	8	22	3	2	71
1906	16.31	19.73	93.000	241	0	0	2	11	90
1907	13.96	15.13	51.000	91	14	20	1	15	108
1908	15.52	17.75	112.800	293	6	23	2	7	5
1909	21.15	24.05	145.397	404	4	54	2	15	68
1910	16.79	23.87	94.900	224	7	6	2	7	31
1911	9.46	13.68	200.100	290	12	94	1	8	6
1912	13.05	14.97	248.450	432	7	49	1	14	96
1913	10.82	15.66	258.200	207	7	111	0	16	7
1914	6.12	9.36	247.647	181	13	107	0	14	75
1915	18.33	19.76	341.649	806	7	36	2	7	23
1916	20.25	23.23	121.727	374	17	8	3	1	66
1917	17.25	21.86	74.580	153	2	81	2	1	6
1918	10.53	12.01	82.144	126	19	47	1	10	102
1919	8.22	12.38	298.760	280	16	48	0	18	90
1920	16.76	19.30	283.064	710	18	4	2	10	26
1921	12.98	17.16	254.835	423	7	76	1	13	25
1922	14.90	20.00	269.184	647	2	81	2	8	9
Mean for 19 years							2	0	96

The PROVED Best Tractor for every farming operation

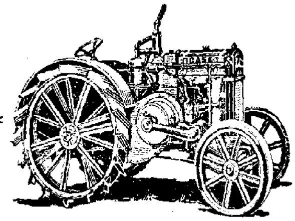
CASE

Kerosene Farm & General Purpose Tractor

Ploughing, cultivating, seeding, harvesting or hauling—the Case 15-27 takes a twelve-horse load continuously and without fuss.

Our Service Department does everything possible to make the FIRST COST the LAST COST!

The proof is contained in dozens of letters from enthusiastic farmer-users. For further information sign and send the corner slip to-day.



Sole Australian Agents:

Commonwealth Agricultural Service Engineers Limited

Head Office:

53-57, Morphett St., Adelaide.

'Phone Central 6870.

Branches in all the States.

To Commonwealth Agricultural Service Engineers Ltd.,
53-57, Morphett Street, Adelaide.
Please send me catalogue and copies of testimonials from users.
Name....................
Address....................

C24

It should be interesting to consider briefly the composition of the crops included in the hay harvest. With one exception they were all grown on fallowed land, the exception being a mixed crop of wheat and oats sown on pea stubble. The wheaten hay area comprised 111.72 acres, which yielded 2 tons 11cwts. 77lbs. per acre; the oaten hay area was 56.96 acres, from which 2 tons 10cwts. 103lbs. were gathered, and the area devoted to a mixture of wheat (King's Red) and oats (Scotch Grey) was 24.35 acres, the yield per acre being 3 tons 1cwt. 22lbs. In this comparison I have ignored the small area of wheat and oats grown after pease. The difference between the returns from the wheat crop and oaten area is negligible, but the mixed crop shows to advantage to the extent of over 20 per cent. Here, again, one must guard against the fallacy of drawing deductions from single tests. I hope to continue the trials for several years, so that reliable average figures may be secured.

TABLE XII.—*Summary of 1922 Hay Returns.*

	Area.	Total Yield.			Acre Yield.		
Field. Crop.	Acres.	T.	C.	L.	T.	C.	L.
Grainger's C—Wheat	58.16	160	18	19	2	15	30
Nottle's A—Wheat	53.56	127	16	63	2	7	82
	111.72	288	14	82	2	11	77
No. 5A—Oats	56.96	145	0	45	2	10	103
No. 6C—Wheat and oats	24.35	74	10	15	3	1	22
No. 7A—Wheat and oats	7.16	18	1	68	2	10	59
	31.51	92	11	83	2	18	86
Headlands—Various	69.00	120	15	95	1	15	1
Totals	269.18	647	2	81	2	8	9

In the next two tables are compared the chief varieties of wheat and oats grown at the College from the point of view of hay production. Taking the wheats first, the highest average for the three-year period 1920-1922 was obtained from an early selection of Crossbred 53 selected at the College. The yield per acre is practically 2½ tons, and this is closely approached by one of our beardless crossbreds of the King's Early type, namely, Sultan. There are five of these beardless crossbreds appearing in Table XIII., and two of them are placed ahead of Early Crossbred 53; but as they have only been subjected to trial for two seasons, their figures are not strictly comparable with the others. Felix and President are the remaining two.

and the position they occupy in respect to King's White and King's Red bears out the contention that the elimination of the beard has not been attended by any lessening of vigor or diminution of hay-growing qualities.

TABLE XIII.—*Showing Hay Returns from Different Wheats, 1919-1922.*

Variety.	1920.			1921.			1922.			Means.		
	T.	C.	L.	T.	C.	L.	T.	C.	L.	T.	C.	L.
Rajah		—		2	0	65	3	1	80	2	11	17
Mahrajah		—		2	4	43	2	16	13	2	10	28
Early Crossbred 53	3	4	71	2	0	57	2	4	88	2	9	109
Sultan	2	16	75	1	18	107	2	11	24	2	8	106
King's Red	2	2	106	2	9	71	2	8	45	2	6	111
Felix	2	8	33	2	2	49	2	10	13	2	6	106
Caliph		—		2	1	93	2	10	96	2	6	39
President	2	3	19	1	19	89	2	16	4	2	6	37
King's White	2	5	23	2	4	22	2	9	2	2	6	16
Faun	2	12	45	1	19	93	1	18	67	2	3	68

More and more attention is being given to oats by farmers in wheat-growing areas. They are concerned chiefly with their capacity to grow rapidly in the autumn and early winter, and later to ripen into grain crops. Relatively few grow large areas of oaten hay, but the number who do so is growing rapidly, and as it becomes known that with early strains oaten hay may be substituted for wheaten hay without reduction in yield, the former will come rapidly into favor. In the appended table the average hay yields of most of the newly introduced oats are listed, and of those shown only two—Algerian and Ruakura—are slow starters. Of the others, the best for early growth are Early Burt, Lachlan, Bathurst Early, Yarran, and Sunrise. So far as the trials have gone, Early Burt has outstripped all competitors, its acre-yield average for the two seasons being 3 tons 3cwts. The second oat on the list, Kherson, is noted for the fine quality and stiffness of its stems. It is a splendid crop to bind, and the ears fill well, although the sample of ripened grain is not attractive, being thin and husky. As a hay crop, however, it has proved very successful, and can be recommended with confidence for exposed situations and windy districts. Lachlan has in no sense been a dissappointment as a hay crop, for although it has been surpassed by several other varieties, an average yield of nearly 2½ tons is quite satisfactory, and I hold the opinion that as the seasons go past, and data are collected, it will be found occupying a much more prominent position. It has wonderful vigor and constitution, and in seasons that are less favorable for hay, I expect it to yield better in comparison than several that are ahead of it in Table XIV.

TABLE XIV.—*Showing Hay Returns from Several Varieties of Oats.*

Variety.	1921.			1922.			Means.		
	T.	C.	L.	T.	C.	L.	T.	C.	L.
Early Burt	3	3	76	3	2	36	3	3	0
Kherson	3	0	19	2	16	44	2	18	32
Sunrise	3	0	30	2	8	67	2	14	49
Kelsall's	2	16	84	2	11	73	2	14	23
Scotch Grey	2	18	9	2	7	42	2	12	82
Stark's	2	16	41	2	8	6	2	12	24
Ruakura	2	16	29	2	7	27	2	11	84
Lachlan	2	9	12	2	10	58	2	9	91
Bathurst Early	1	14	71	3	2	91	2	8	81
Guyra		—		2	17	66		—	
Yarran		—		2	10	97		—	
Algerian		—		2	6	0		—	

BARLEY CROPS.

Through extending the area sown to oats, curtailment of the barley cropping programme has become necessary, in order that sufficient pasturage should be provided. An increase in the number of malting barleys under trial has resulted in a further reduction of the areas under our selected Cape barleys—Roseworthy Oregon and Shorthead. These Cape barleys, however, are as productive as ever, the returns this year being a few pounds over 40bush. per acre. Our reason for bringing more malting barleys under observation has been the acknowledged difficulty in the securing of pure, clean samples of seed. The cultivation of two-rowed barleys has become much more general in the Lower North during the last eight or ten years, and there is now a strong demand for high-grade seed of Prior and other tested varieties, and it will be observed from Table XV. that both Duckbill, and a selection from Duckbill which is known as Stucky, are at least equal to Prior in College experience. The variety Larsen 32 was imported from Denmark, and apparently has not yet become acclimatised; but the area devoted to it was too small to affect the quoted average for the malting barley group. This average, it will be noted, is only 3bush. below that of the Cape barleys, and in view of the difference in value between the two types of grain, malting barley appears to be the more profitable. A succession of harvest returns would be required, however, before a definite statement could be made on this point. The average yield for 1922, all varieties included, is very satisfactory, and compares more than favorably with the mean return for the preceding 19 years. Details of these are shown below.

TABLE XV.—*Showing Yields of Various Species and Varieties of Barley*, 1922.

Variety	Selection.	Area. Acres.	Total Yield. Bush.	Total Yield. lbs.	Acre Yield. Bush.	Acre Yield. lbs.
Malting barleys—						
Prior	3	0.335	13	4	39	2
Prior	2	10.110	376	26	37	12
Stucky	1	0.212	8	40	41	25
Duckbill	1	0.212	8	23	39	45
Larsen 32	1	0.088	1	42	20	34
Totals		10.957	408	35	37	15
Cape barleys—						
Roseworthy Oregon	13	15.324	675	31	44	4
Shorthead	14	15.062	551	6	36	30
Shorthead	15	1.747	62	8	35	29
Totals		32.133	1,298	45	40	21
Hexagonal barleys—						
Tunis No. 4	1	4.249	207	6	48	37

TABLE XVI.—*Showing General Average Barley Yields on the College Farm*, 1904-1922.

Season.	Rainfall. "Useful." Inches.	Rainfall. Total. Inches.	Area. Acres.	Average Yield per Acre. Bush.	Average Yield per Acre. lbs.
1904	11.60	14.70	27.86	38	33
1905	14.23	16.71	65.73	25	4
1906	16.31	19.73	51.00	40	38
1907	13.96	15.13	79.30	31	21
1908	15.52	17.75	94.83	43	49
1909	21.15	24.05	75.27	35	0
1910	16.79	23.87	113.42	37	9
1911	9.45	13.68	76.09	39	31
1912	13.05	14.97	123.82	22	21
1913	10.82	15.66	91.09	12	19
1914	6.12	9.36	12.85	2	26
1915	18.33	19.76	24.44	41	40
1916	20.25	23.23	128.198	12	15
1917	17.25	21.86	126.053	40	46
1918	10.53	12.01	109.660	23	5
1919	8.22	12.38	56.385	17	15
1920	16.76	19.30	105.010	21	30
1921	12.98	17.16	66.698	26	25
1922	14.90	20.00	54.103	37	38
Means for 19 years				28	44

OATEN HARVEST.

The early oats have again come up to expectations as grain yielders. Three of them gave returns below that of Algerian, but two of these—Bathurst Early and Stark's—gave a slightly more hay per acre and grew three or four times as fast during the first three months. The other one—Quondong—was not submitted to a hay test, but it ranks very high as a producer of early feed. The top place in yield of grain is occupied, for the third year in succession, by Lachlan, which comes out with an average yield of over 15 bags per acre for the last four seasons. Scotch Grey oats have also performed extremely well, their average over five seasons being 37¾ bush. per acre. The next in order of merit is Early Burt, with nearly 12 bags to the acre of grain, and when we consider, in conjunction with this, its hay average of 63cwts. per acre, we are bound to admit that there are good grounds for regarding it as the best general purpose oat for dry areas.

To facilitate the comparative study of these new varieties two tables are included; one gives the individual grain yields over a series of years, and the other contains in parallel columns the mean figures fo both hay and grain.

TABLE XVII.—*Showing Yields of Varieties of Oats,* 1918-1922.

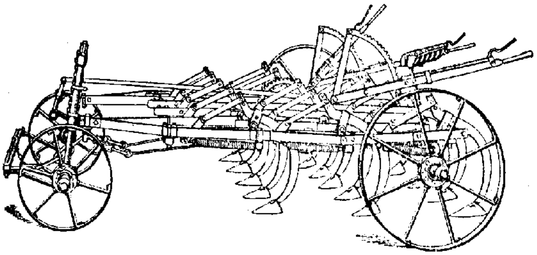
Variety.	1918.		1919.		1920.		1921.		1922.		Mean
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.
Lachlan	—		42	29	57	6	41	22	39	20	45
Scotch Grey . . .	49	17	31	12	55	15	30	23	22	4	37
Early Burt . . .	—		48	3	36	27	26	15	31	1	35
Kelsall's	17	28	33	3	49	2	39	1	27	27	33
Kherson	29	29	22	19	55	9	25	16	32	8	33
Ruakura	21	3	36	24	46	12	24	37	29	22	31
Sunrise	25	33	15	27	46	4	26	13	25	32	27
Guyra	—		16	1	55	29	13	37	23	20	27
Bathurst Early. .	—		37	16	31	7	19	9	17	19	26
Stark's	41	26	21	3	32	9	18	12	15	16	25
Quondong	—		—		36	4	12	39	20	12	23
Yarran	—		21	15	34	21	14	6	29	29	22
Mulga	—		—		20	0	24	1	22	23	22
Algerian	—		—		—		—		21	35	—
New Zealand Cape	—		—		—		—		17	18	—

TABLE XVIII.—*Giving Average Hay and Grain Yields of Oat Varieties.*

Variety.	Period.	Hay per Acre.			Period.	Grain per Acr
		T.	C.	L.		B.
Lachlan	1921-1922	2	9	91	1919-1922	45
Scotch Grey	1921-1922	2	12	82	1918-1922	37
Early Burt	1921-1922	3	3	0	1919-1922	35
Kelsall's	1921-1922	2	14	23	1918-1922	33
Kherson	1921-1922	2	18	32	1918-1922	33
Ruakura	1921-1922	2	11	84	1918-1922	31
Sunrise	1921-1922	2	14	49	1918-1922	27
Guyra	1922	2	17	66	1919-1922	27
Bathurst Early	1921-1922	2	8	81	1919-1922	26
Stark's	1921-1922	2	12	24	1918-1922	25
Yarran	1922	2	10	97	1919-1922	22
Algerian	1922	2	6	0	1922	21

In the final table for oats are given the average yield for each ye from 1905 onwards. In the years 1907 and 1914 the crops were

TRAEGER'S
Stump-Jump Implements
Ploughs, 4 to 10 Furrows. Cultivators, 13 to 21 Tynes.



The illustration shows our 17-Tyne Ideal Lock Spring Cultivator. This implement has proved itself invaluable in hilly and stony land; it is easily adjustable, and will stand up to the roughest work. We also supply bridle draught cultivators, if required, and can deliver from stock. We also manufacture,

PLOUGHS,
HARROWS,
HAY TROLLIES.

Our hay trollies are well known and require very little comment on our part, but we would like to stress the following points:—

Soundness of Construction and Seasoned Timber, Correct Setting of Axles and Alignment, ensuring the Lightest Possible Draught.

ASK FOR AND SEE THAT YOU OBTAIN

TRAEGER'S CULTIVATOR SHARES

From your local supplier; if he cannot supply we will be pleased to send your requirements direct.

PRICE LIST AND PRINTED MATTER ON APPLICATION.

J. G. TRAEGER & SONS,
HAMLEY BRIDGE, SOUTH AUSTRALIA

comparative failure, and stock were turned in to feed them off. In computing the mean return for the 18-year period, these two seasons have been included in this report.

Table XIX.—*Showing the Average Oat Yield for the Period* **1905-1922.**

Season.	Rainfall. "Useful." Inches.	Rainfall. Total. Inches.	Area. Acres.	Yield per Acre. Bush.	Yield per Acre. lbs.
1905	14.23	16.71	20.00	43	10
1906	16.31	19.73	33.50	41	18
1907	13.96	15.13	20.00	—	
1908	15.52	17.75	20.00	22	28
1909	21.15	24.05	23.52	43	19
1910	16.79	23.87	24.60	28	15
1911	9.45	13.68	22.82	22	8
1912	13.05	14.97	52.00	10	4
1913	10.82	15.66	3.33	11	36
1914	6.12	9.36	—	—	
1915	18.33	19.76	1.10	32	32
1916	20.25	23.23	6.36	27	15
1917	17.25	21.86	20.88	14	25
1918	10.53	12 01	35.99	31	4
1919	8.22	12.38	36.51	10	17
1920	16.76	19.30	33.83	29	37
1921	17.98	17.16	55.40	25	22
1922	14.90	20.00	79.33	28	29
Means for 18 years				23	22

THE WHEAT HARVEST.

Wheat was harvested from three fields in 1922, and in two of them—Nottle's C and No. 16—the average yields were above the mean. In the third field, which is known as Day's, the crop consisted almost entirely of early wheats, sown between 29th May and 10th of June. The plots were drilled under ideal conditions, and made a promising start. They were not sufficiently well rooted, however, to stand the unusually long spell of cold, wet weather in July, and weeds gained the upper hand. They might have recovered in the spring but for the low temperatures in August and September. On 20 occasions between August 9th and October 3rd frosts were recorded, and at one time I contemplated giving over the field to livestock. Indeed, but for the welcome showers that fell to the extent of an inch or more early in December, this course would certainly have been adopted. A drastic change of plans such as this would have entailed is fraught with more serious consequences on a seed wheat farm than on an ordinary holding, and we have frequently to suffer in the matter of records in order to preserve the continuity of varieties and secure true averages from which reliable deductions may be drawn. These considerations led me eventually to harvest the plots, and the effect of the decision has been to depress the seasonal average below the mean.

The high returns obtained from Nottle's C, which averaged over 7 bags to the acre, and also those from the experimental field No. 16, which combined to furnish an average of 6 bags per acre, have gone a long way towards correcting the deficiency in Day's field. This is clearly shown in Table XX., which summarised the wheat returns for the past year. It is interesting to find that after nearly 20 years the farm average is 17bush. 42lbs., despite the fact that a vast number of varieties, more or less unsuited to our conditions, have been grown during that period.

TABLE XX.—*Summary of Wheat Harvest*, 1922.

	Area. Acres.	Total Yield.		Acre Yield.	
		B.	L.	B.	L.
Farm crops—					
Nottle's C	71.344	1,557	12	21	50
Day's A and B	118.359	1,281	29	10	50
Totals	189.703	2,838	41	14	58
Experimental plots (1 acre and over)	115.375	2,073	11	17	58
Totals	305.078	4,911	52	16	6
Experimental plots (under 1 acre)	8.094	162	43	20	6
Grand totals	313.172	5,074	35	16	12

TABLE XXI.—*Showing the Average Yields of Wheat on the College Farm*, 1904-1922.

Season.	Rainfall.		Area Under Wheat. Acres.	Average Yield per Acre	
	"Useful." Inches.	Total. Inches		Bush.	lbs.
1904	11.60	14.70	330.00	18	3
1905	14.23	16.71	212.00	24	11
1906	16.31	19.73	318.00	14	30
1907	13.96	15.13	178.00	13	20
1908	15.52	17.75	258.52	22	14
1909	21.15	24.05	328.47	25	5
1910	16.79	23.87	267.35	16	38
1911	9.45	13.68	234.98	14	17
1912	13.05	14.97	232.89	19	36
1913	10.82	15.66	333.07	6	32
1914	6.12	9.36	148.69	11	28
1915	18.33	19.76	367.271	21	13
1916	20.25	23.23	330.937	24	44
1917	17.25	21.86	353.473	17	32
1918	10.53	12.01	320.326	17	36
1919	8.22	12.38	329.957	9	22
1920	16.76	19.30	341.542	26	57
1921	12.98	17.16	286.393	16	56
1922	14.90	20.00	305.078	16	6
Means for 19 years				17	42

YIELDS OF CHIEF VARIETIES.

A careful analysis of the records has been made for the purpose of bringing into a table those varieties that have been grown continuously over a fair number of years. In some instances the figures given in the mean yield column could have been calculated over a much longer period, but it is better when possible to compare yields drawn from the same seasons. It is pleasing to find that a College-bred wheat—Sultan—holds pride of place with 24bush. 14lbs. average return per acre for the past six years. Early Gluyas has an equally good record, since only 20lbs. per acre separates it from Sultan, and two additional seasons have been taken into account in calculating its mean yield. The table appended requires no further comment, as the results are clearly shown, and readers will be able to draw their own inferences. I should like to point out, however, that the three-quarter-bred King's Early wheats—Sultan, President, and Felix—which in an earlier part of the report were noted as good hay wheats, are holding their own against such well-established varieties as King's White, King's Red, Late Gluyas, and Queen Fan. Further, it may be remarked that only two of the varieties included in the table are showing mean yields below the normal average for the whole farm, which it will be remembered is 17bush. 42lbs. Strange to say, that splendid variety, Federation, is one of these, whilst Marshall's No. 3 is the other.

TABLE XXII.—*Showing Yields of Chief Varieties of Wheat Grown as Farm Crops*, 1915-1922.

Variety.	1918.		1919.		1920.		1921.		1922.		Means.		Period.
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	
Sultan	35	15	19	51	28	11	17	6	24	12	24	14	1917-22
Early Gluyas . . .	14	53	9	56	34	25	30	57	20	49	23	54	1915-22
Caliph	27	29	15	54	27	46	21	20	27	28	22	21	1915-22
President	30	4	18	41	25	22	11	47	28	27	21	35	1917-22
Felix	22	20	20	41	28	8	9	38	28	21	21	16	1917-22
Early Crossbred 53	15	41	9	21	38	5	15	5	21	46	21	21	1917-22
Ford	14	32	19	12	25	23	15	18	20	46	20	57	1916-22
King's White . . .	15	30	13	54	22	20	13	16	22	55	20	4	1915-22
Faun	18	8	26	7	23	53	20	55	17	53	19	49	1917-22
Late Gluyas . . .	18	12	5	11	26	29	23	25	17	18	19	30	1915-22
King's Red	18	55	10	13	30	25	14	0	23	33	19	29	1915-22
Rajah	19	27	19	7	25	46	9	27	22	48	19	7	1917-22
Queen Fan	17	3	5	19	22	47	21	15	23	37	19	4	1915-22
Mahrajah	15	22	16	25	27	45	11	20	20	52	18	29	1917-22
Yandilla King . .	19	10	9	47	27	36	9	47	24	12	17	56	1915-22
Federation	14	8	6	58	25	18	16	44	20	0	15	55	1917-22
Marshall's 3B . . .	16	43	8	35	28	17	11	14	27	32	15	29	1915-22

TABLE XXIII.—*Showing Yields of Latest Strains of College Selected Pedigreed Wheats Comparatively with those Obtained from Earlier Strains in Previous Seasons.*

Variety.	Selection.	1922.		1921.		1920.		1919.		Means.		Period.
		B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	
Dan	4	20	16	24	39	22	6	39	34	26	39	1919-22
Sultan	6	24	12	22	6	26	46	22	47	25	19	1917-22
Ford	8	25	33	22	58	25	23	19	12	24	11	1916-22
President	6	28	27	21	3	28	4	20	23	23	52	1917-22
Caliph	7	27	28	16	10	29	11	19	56	23	36	1916-22
Felix	6	28	21	22	59	27	10	20	41	23	29	1917-22
Fortune	8	23	38	13	2	22	21	14	58	21	59	1916-22
Emperor	6	26	12	15	30	14	41	16	40	20	51	1917-22
King's White	17	22	55	15	49	32	39	21	40	20	44	1909-22
Gypsy	4	21	21	14	49	23	50	22	10	20	33	1919-22
Faun	7	17	53	21	21	27	20	20	41	20	28	1917-22
King's Red	17	23	33	15	50	30	34	19	33	20	18	1909-22
Bearded Gluyas	17	28	8	—		26	47	24	5	20	11	1909-22
Queen Fan	13	23	37	17	11	20	41	17	36	20	9	1910-22
Pharaoh	4	16	40	20	33	21	1	21	22	19	54	1919-22
Federation	14	20	0	16	33	17	59	12	37	19	26	1909-22
Gluyas	17	20	49	17	0	22	4	20	42	19	8	1909-22
Marshall's No. 3	16	27	32	18	23	19	43	18	11	19	5	1909-22
Early Crossbred 53	7	16	56	14	5	24	14	19	10	19	2	1917-22
Mahrajah	6	20	52	19	6	15	31	23	23	18	50	1917-22
Rajah	6	22	48	14	32	19	53	17	35	18	44	1917-22
Late Gluyas	17	17	18	14	58	26	33	20	35	18	13	1909-22
Yandilla King	11	24	12	16	0	25	12	11	58	17	34	1912-22

TABLE XXIV.—*Showing Yields of Some New College Crossbred Wheats* (1916, 1917, 1918 *Crosses*).

Variety.	Selection.	Pedigree.		Yield per Acre.							
				1922.		1921.		1920.		Means.	
				B.	L.	B.	L.	B.	L.	B.	L.
zan	3	Emperor × Caliph	(1916)	24	22	22	39	28	30	25	10
wab	3	Anvil × Sultan	(1916)	25	10	23	50	26	20	25	7
gent	3	Rajah × Gluyas	(1916)	23	38	18	19	23	27	22	28
ptain	3	Fan × Caliph	(1916)	18	3	18	26	27	3	21	11
chor	3	Anvil × Caliph	(1916)	16	52	16	25	26	23	19	53
yalty	3	Rajah × Caliph	(1916)	17	37	15	56	22	42	18	45
III.	2	Fan × White Fife	(1917)	12	38	27	12	—		19	55
II.	2	Fan × Crossbred 53	(1917)	13	6	15	26	—		14	16
II.	2	Fan × Cadet	(1917)	8	20	12	17	—		10	19
I.	1	College Comeback × Ford	(1918)	33	20	—		—		—	
II.	1	Ford × Florence	(1918)	21	53	—		—		—	
II.	1	Ford × Gluyas	(1918)	20	25	—		—		—	
II.	1	Argentine White × Bonus	(1918)	19	6	—		—		—	
IV.	1	College Comeback × Bonus	(1918)	14	22	—		—		—	

I cannot close this report without commending staff and students on the expeditious manner in which the harvest was carried out. By determined and well-sustained effort the whole of the fields were cleared of hay and grain by the evening of Saturday, December 23rd, and in order to accomplish the task the students, to their credit, voluntarily undertook to work from daylight till after dark. It necessitated the working of the thresher under night illuminations, but many willing hands forced the job through, and it was a pleasure to me to be able to mark my appreciation by awarding additional holidays.

It should be obvious, however, that unskilled youths could never have compassed the work without the hearty co-operation of the directing and assisting staff. Much of the credit due belongs to Messrs. R. C. Scott (Experimentalist) and E. L. Orchard (Farm Superintendent. I am also indebted to them for assistance in the preparation of the data supplied in this report.

SOIL POWER

MEANS

WEALTH TO THE FARM.

TOP SUPERS

GIVE

HIGHEST SOIL POWER.

The Adelaide Chemical & Fertilizer Co., Ltd.,
CURRIE STREET.

PRUNING COMPETITIONS ON RIVER MURRAY IRRIGATION SETTLEMENTS.

On Wednesday, February 28th, representatives of the Cadell, Waikerie, Berri, Renmark, Moorook, and Barmera Branches of the Agricultural Bureau met at Barmera for the purpose of discussing arrangements for a series of pruning competitions to be held on the River Murray irrigation settlements during the coming season. The chair was occupied by Mr. W. R. Lewis, of Berri, who was supported by the Deputy Horticultural Instructor (Mr. C. G. Savage) and the Secretary Advisory Board of Agriculture (Mr. H. J. Finnis). A report of the competitions last year was read by Mr. H. Lehmann, of Waikerie. After consideration, it was decided that arrangements should be entered upon for competitions at Cadell on June 19th; Waikerie, June 20th; Moorook, June 21st; Renmark, June 26th; Berri, June 27th. The competitions are to be divided into two classes, namely, vine pruning and fruit tree pruning. General conditions governing the tests were agreed to as follows:—

VINE PRUNING COMPETITIONS.

(1) In this class each competitor will be required to prune:—(*a*) Five vines of the Muscat Gordo Blanco type; (*b*) five vines of the Zante currant type; (*c*) five vines of the Sultana type.

(2) The first named (*a*) are to be pruned on the bush system.

(3) The second (*b*) are to be cordon or espalier spur pruned, at the discretion of the committee.

(4) The third named (*c*) are to be espalier rod and spur pruned.

(5) The competitors will be required to twist and secure the rods to the trellis wires in the case of the Sultana vines.

(6) The time to be allowed for each class will be determined by the various committees after examination of the vines and trees to be pruned in their respective districts. All competitors will be required to cease work on expiration of time allowed. The judges will be allowed to take points from competitors who have not completed their vines in the given time. This will be at the discretion of the judges. In the event of two (2) or more competitors gaining equal points in any one class, the competitor who finished his work first will be awarded the first prize.

(7) The judges will allot points to each competitor in accordance with the scale set out below:—

Type.	Division.	Points.
Gordo—	Selection of fruiting wood	60
	Shaping of vines	12
	Clean cutting	18

Type.	Division.	Points.
Currant—	Selection of fruiting wood	60
	Shaping of vines	18
	Clean cutting	12
Sultana—	Selection of fruiting wood	36
	Twisting the canes	36
	Shaping of vines	16
	Clean cutting	12

Fruit Tree Pruning.

(1) The competitors will be required to prune one (or more at the discretion of the committee):—(*a*) Peach tree, (*b*) apricot tree, (*c*) pear tree.

(2) Time allowed for each class will be governed by the same conditions as for vines.

(3) Judges will allow points to each competitor in accordance with the scale set out below:—

Type.	Division.	Points.
Peach—	Selection and treatment of fruiting wood	45
	Selection and treatment of leaders and shaping of tree	45
	Clean cutting	30
Apricot—	Selection and treatment of fruiting wood	45
	Selection and treatment of leaders and shaping of tree	30
	Clean cutting	15
Pear—	Selection and treatment of fruiting wood	36
	Selection and treatment of leaders and shaping of tree	36
	Clean cutting	18

In the event of it being found impossible to secure suitable bush vines, the committee will substitute espalier pruned Muscat Gordo Blanco or Doradillo vines in lieu thereof.

Championship.

In addition to the district competitions referred to above, championship competitions will be held at Moorook on Thursday, June 28th. These championship events will be open to persons placed first, second, and third, respectively, in the district competitions, provided that each competitor in the championship competitions shall have secured an average minimum of 75 per cent. of the total marks awarded in the section for which he enters, and provided also that he shall have gained a certificate (*i.e.*, 80 per cent. of the marks awarded) in two of the three sections in the district competitions.

For the arrangements of the championship events a committee consisting of one representative from the Branches of the Agricultural Bureau at Cadell, Moorook, Waikerie, Renmark, and Berri was appointed. Mr. W. R. Lewis, of Berri, will act as Hon. Secretary, and Mr. S. Sanders, jun., of Moorook, Assistant Hon. Secretary. In addition to the silver cups which are usually awarded to the first prizewinners in each section in the championship event, it was decided to endeavor to award medals for the second and third prizes.

JUDGES.

It was decided that an effort should be made to secure the services of the Manager of the Government Experimental Orchard at Berri (Mr. C. G. Savage) to judge in all the competitions. The judge will have the assistance of two consultative judges, to be appointed by the local committee responsible for the competitions.

ORCHARD NOTES FOR SOUTHERN DISTRICTS.

[By C. H. BEAUMONT, Instructor and Inspector.]

There will not be many apples available for export this year; nevertheless, the greatest care will be necessary in grading and packing. If we have a short crop other States have a good one, and our fruit will have to compete with it. Therefore, grade carefully for quality and size. Use good cases and see that they are correctly marked; wrap and pack so that the fruit will stand any inspection. Do not send very large fruit, 2¼in. to 2¾in. are the best sizes.

The same remarks apply to fruit intended for cold storage; use only sound fruit from trees of fair age. Big, soft fruits are not suitable for the store. If you wish to cool all your crop do so, but grade it out within a few weeks and get rid of unsound or large fruits. Do not put fruit direct from the tree into the cold store, let it cool over night first.

The season's work has again demonstrated the usefulness of arsenate of lead as a preventive of codlin moth. In orchards where it has been used in a proper way it is difficult to find damaged apples or pears.

Do not forget to use Bordeaux mixture on trees which have developed fungus diseases badly; use it before the leaves drop. Japanese plums and cherries need this treatment to help winter and spring work.

Pear slug has spread almost all over the hills and now has a firm hold on the hawthorn hedges and will have to be dealt with every year in future.

Weak, sickly trees should be taken out as early as possible and the soil prepared for new trees. Leave the hole open and burn the soil before placing the new tree. Order trees for renewing or extending.

Apricots, peaches, apples, and pears may be pruned partly by cutting back the lateral growth, leaving leaders and limbs until winter. The bearing rods on vines may be removed, it will help the wood for the coming season.

Oranges which have not set well may be cinctured just at forming time by making a clean cut with a sharp knife through the bark to the wood. Keep branches well off the ground to prevent "brown rot," and sow barley or other seed under the trees at first opportunity.

ANALYSES OF ARSENATES OF LEAD.

[Note by GEO. QUINN, Horticultural Instructor, &c.]

During November and December, 1922, 10 samples representing all of the brands of arsenates of lead procurable on the local market were purchased unofficially by this Branch and submitted to the Department of Chemistry for analysis.

As will be seen from the appended report by the Director of Chemistry, these samples were chemically tested ; firstly, for their respective total percentages of moisture, lead, water insoluble arsenic, and water soluble arsenic ; and further, on a dry basis for the three constituents last named.

The physical tests consisted of ascertaining the powers of each compound to hold in suspension when mixed with water in the proportions advised by the manufacturer on the container when the preparation is to be used as a spray to destroy newly hatched codlin moth caterpillars. The suspension trials covered periods of 5, 15, and 30 minutes respectively. These were suggested to note how the compounds of the various makers compared when subjected to conditions of agitation—or lack of same—such as may be found under orchard conditions where pumps are fitted with agitators of varying degrees of efficiency are in use.

From a study of the third table of Dr. Hargreave's report it will be noted how much more buoyant the particles are in the samples numbered 2, 1, and 6, when compared with the remainder. Sample 9 displays a singular deficiency in buoyancy when permitted to stand unshaken for a longer period than five (5) minutes.

From the tables of chemical constituents the whole of these compounds would appear to be of reasonably even composition, and accepting American standards of risk only one of these brands appears to approach the danger line to vegetation in its water soluble arsenic content.

REPORT BY THE DIRECTOR OF CHEMISTRY.

Eight samples of arsenate of lead, No. 1296, received from you on November 1st, 1922, and two samples received April 12th, 1922, have been analysed with the following results :—

Analyses of the samples as received :—

No.	Brand.	Moisture.	Total Lead (PbO).	Total Arsenic (As_2O_5).	Water Soluble Arsenic (As_2O_5).
		%	%	%	%
1	" Aero " (powder), A. M. Bickford & Sons	0·16	62·5	31·55	0·09
2	" Elephant " (paste), Jaques Pty. Ltd.	44·1	**34·9**	18·1	0·11
3	" Blue Bell " (paste), Blyth's	44·9	34·2	17·1	0·11
4	" Green Cross " (powder), Kil-Tone	0·09	66·2	30·2	0·28
5	" Hemingway's " (paste)	36·6	39·0	20·7	0·48
6	" Swift's " (paste), Bowker Insecticide Co.	42·4	37·9	17·2	0·11
7	" Electro " (powder), Vreeland Chem. Co.	0·14	66·1	32·4	0·23
8	" Electro " (paste) Vreeland Chem. Co.	37·2	40·3	19·5	0·13
9	" Vallo " (powder)	0·38	64·7	30·1	0·14
10	" Vallo " (paste)	59·5	25·9	12·8	0·11

Results obtained on the moisture free sample :—

No.	Total Lead (PbO).	Total Arsenic (As_2O_5).	Water Soluble Arsenic (As_2O_5).
	%	%	%
1	62·6	31·6	0·09
2	64·2	32·4	0·20
3	62·1	31·0	0·20
4	66·2	30·2	0·28
5	61·5	32·6	0·76
6	65·8	29·8	0·19
7	66·2	32·4	0·23
8	64·2	31·0	0·21
9	65·0	30·2	0·14
10	64·0	31·5	0·27

Suspension Tests.—The samples were mixed with water in the proportions recommended by the manufacturers for use in spraying trees to destroy codlin moth caterpillars. In cases in which the label specified a minimum and a maximum quantity, the mean of the two weights was taken for the test.

No.	Mean Weight Recommended for 100galls.	Percentage Remaining in Suspension after Standing 5 Minutes.	Percentage Remaining in Suspension after Standing 15 Minutes.	Percentage Remaining in Suspension after Standing 30 Minutes.
	Lbs.	%	%	%
1 (powder)	3	33·6	27·9	17·9
2 (paste) ..	4½	52·4	43·0	36·7
3 (paste) ..	5	11·2	6·3	4·1
4 (powder)	2	24·0	10·0	3·6
5 (paste) ..	6	4·9	3·1	1·7
6 (paste) ..	4	36·4	28·0	16·6
7 (powder)	2	17·8	14·2	4·6
8 (paste) ..	4½	7·5	4·9	3·0
9 (powder)	2	31·2	13·2	6·8
10 (paste) ..	4	7·6	4·2	3·5

W. A. Hargreaves, Director of Chemistry.

Mr. Orchardist, has it occurred to you

that **IDLE ACRES PAY NO RENT,** and that those blank spaces in your orchard would become profitable and greatly increase the value of your property if planted with good fruit trees. Fill them this season with **QUALITY FRUIT TREES** from the Balhannah Nurseries.

Send for the **PLANTERS GUIDE,** Post Free to any address.

Inquiries solicited on any matters pertaining to fruit trees.

BALHANNAH DECIDUOUS NURSERIES,
BALHANNAH, SOUTH AUSTRALIA.

ANALYSES OF FERTILIZERS.

The following are the results of analyses made by the Government Agricultural Analysts (Messrs. S. D. Shield and C. E. Chapman) of samples of fertilizers taken by Assistant Inspector Hunter during the year ended December 31st, 1922:—

Reference.	Name of Firm and Fertilizer.	Phosphate.						Nitrogen.		Potash, K_2O.	
		Water Soluble.		Citrate Soluble.		Acid Soluble.					
		Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.
	Adelaide Chemical & Fertilizer Co., Ltd.—	°/o	°/o	°/o	°/o	°/o	°/o	°/o	°/o	°/o	°/o
1273 ...	Guano Super.	27·0	28·8	3·0	1·8	3·0	5·2	—	—	—	—
1274	Bone Dust	—	—	—	—	40·0	41·2	3·25	3·4	—	—
1275	S.A. Super.	30·0	30·6	—	—	—	—	—	—	—	—
1276	Agricultural Lime	—	—	—	—	—	—	—	—	—	—
1277	Mineral Super.	36·0	36·3	—	—	—	—	—	—	—	—
1278	A.C.W. Phosphate Fertilizer	22·0	19·5	3·0	3·9	28·0	34·2	—	—	—	—
	Crompton & Son—										
1271	Gardeners' Friend	—	—	—	—	26·5	31·1	4·25	5·0	—	—
1272	Pure Bone Dust	—	—	—	—	42·0	46·8	3·5	3·93	—	—

ANALYSES OF FERTILIZERS—*continued.*

Reference.	Name of Firm and Fertilizer.	Calcium Oxide, CaO.		Bone Manure, Fine Material.		Phosphate Fertilizer, Fine Material.		Agricultural Lime, Fine Material.	
		Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.	Vendor's Guarantee.	Result of Analysis.
	Adelaide Chemical & Fertilizer Co., Ltd.—	%	%	%	%	%	%	%	%
1273	Guano Super.	—	—	—	—	—	—	—	—
1274	Bone Dust	—	—	40·0	57·0	—	—	—	—
1275	S.A. Super.	—	—	—	—	—	—	—	—
1276	Agricultural Lime	45·0	43·4	—	—	—	—	100·0	99·9
1277	Mineral Super.	—	—	—	—	—	—	—	—
1278	A.C.W. Phosphate Fertilizer	—	—	—	—	95·0	98·0	—	—
	Crompton & Son—								
1271	Gardeners' Friend	—	—	20·0	26·4	—	—	—	—
1272	Pure Bone Dust	—	—	40·0	62·4	—	—	—	—

February 1st, 1923.

GEO. QUINN, Chief Inspector of Fertilizers, &c.

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JANUARY, 1923.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during January.	Per Cow during January.	Per Cow October to January.	Per Herd during January.	Per Cow during January.	Per Cow October to January.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/C	30	28·42	25106·5	836·88	3387·06	1061·00	35·37	135·63
1/E	22	18·55	15545·5	706·61	2412·11	645·61	29·35	101·37
1/J	22·68	19·71	15179·5	669·26	2204·72	670·43	29·56	94·66
1/L	20·65	17·68	13693·5	663·11	2520·85	598·81	29·00	111·31
1/M	22	17	12586	572·06	2129·15	615·93	28·00	99·34
1/R	13	11·32	7893	607·15	2146·65	379·47	29·19	100·55
1/T	11·68	9·23	6805	582·62	2112·34	348·29	29·82	101·83
1/U	14	13	14618·5	1044·15	1952·27	587·96	42·00	79·85
1/W	12	10·65	8969	747·41	2560·96	331·80	27·65	95·98
1/X	19·45	18·35	11719·5	602·52	2549·08	526·66	27·08	111·16
1/Y	18·58	17·58	11212·5	603·45	2702·12	489·54	26·35	116·15
1/Z	20	16·10	8589·5	429·48	2125·01	386·71	19·34	95·97
*1/AA	6·68	5	5115	765·71	2192·99	215·75	32·30	94·28
*1/BB	10	7·74	6254·5	625·45	1508·50	262·50	26·25	67·35
†1/CC	13·26	11·84	6037·5	455·31	1018·84	265·08	19·99	43·97
Mean	17·07	14·82	11288·21	661·45	2511·73	492·37	28·85	107·33

* Entered November 1st, 1922. † Entered December 1st, 1922.

COWS YIELDING 1,000GALLS. OF MILK OR 400LBS. OF BUTTERFAT DURING A LACTATION PERIOD.

Name of Cow.	Owner.	No. of Days.	Milk.	Butterfat.
			Galls.	Lbs.
Jean	B. H. Green, Monteith	319	888·50	436·33
Ivy	C. J. Morris, Monteith	311	1459·85	533·24
Beete Annette	J. A. Halliday, Murray Bridge	319	1187·25	498·48
Beauty Annette	J. A. Halliday, Murray Bridge	319	1167·75	465·80
Bolivar of Riverdale	J. A. Halliday, Murray Bridge	319	1122·05	408·22
Marie Donald of Riverdale	J. A. Halliday, Murray Bridge	300	1136·60	421·82
Polly	H. C. Prosser, Mypolonga	319	818·00	404·29
Lossie	M. S. Cheetham, Mypolonga	305	823·70	416·27
Petsie	L. G. Foster, Mypolonga	319	920·45	438·90

MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JANUARY, 1923.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during January.	Per Cow during January.	Per Cow August to January.	Per Herd during January.	Per Cow during January.	Per Cow August to January.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/A	20	19·10	7825·5	391·28	3909·92	359·26	17·96	165·17
2/B	7	6·48	4830·5	690·07	6364·43	202·01	28·86	265·10
2/C	21·26	20·39	12044	566·46	4526·95	473·61	22·28	182·70
2/D	14	11·61	6469	462·07	3274·58	274·67	19·62	130·56
2/E	11	10·97	8212	746·54	4545·86	383·43	34·86	199·40
2/F	20	17·68	5960	298·00	4109·71	256·88	12·84	166·26
2/G	3	3	2170	723·33	5601·00	92·07	30·69	249·30
2/H	28	28	17158·5	612·80	3901·68	708·44	25·30	159·35
2/I	15	14·35	8008·5	533·90	4087·49	336·42	22·43	165·70
2/J	13	13	9021	693·92	5296·37	389·59	29·97	222·94
2/K	19·03	17·03	12009	631·05	3934·39	497·03	26·12	164·84
2/L	32·61	26·58	12824	393·23	3222·21	575·56	17·65	144·83
2/M	67·42	47	19875	270·42	3080·71	868·19	11·88	127·62
2/N	14·19	13·26	6068	427·62	2981·89	240·75	16·97	118·47
2/O	42	30·32	16955	403·67	2799·59	665·93	15·86	113·91
2/Q	33	27·45	12499·5	378·76	3681·64	524·22	15·89	151·16
2/R	16	15	14229	889·31	5461·96	580·93	36·31	233·10
Means	22·15	18·90	10362·26	467·76	3764·22	437·00	19·73	156·30

APPOINT THE—
EXECUTOR TRUSTEE AND AGENCY COMPANY
OF SOUTH AUSTRALIA, LIMITED,
Executor and Trustee of Your Will.
Established, 1880. Estates and Trust Funds (1922) £5,105,442. Write for our Booklet.

DIRECTORS:
W. Herbert Phillipps, Chairman.
John Barker. | G. J. Cowie.
A. G. Rymill. | James H. Gosse.
Sir George Brookman, K.B.E.

Pastoral and Agricultural Inspector .. Charles Grieve.
Manager .. .. E. W. Williamson.

TEMPORARY PREMISES—
11, GRESHAM STREET - - ADELAIDE.

ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, February 14th, there being present Mr. W. S. Kelly (Chairman), Mr. W. J. Colebatch (Principal R.A.C.), Colonel Rowell, Mr. J. Wallace Sandford (President Royal Agricultural and Horticultural Society), Mr. T. H. Williams (Chief Inspector of Stock), Messrs. F. Coleman, A. M. Dawkins, H. Wicks, W. G. Auld, G. Jeffrey, and the Secretary (Mr. H. J. Finnis).

Apologies were received from the Director of Agriculture (Professor Arthur J. Perkins), Captain S. A. White, and Mr. L. Cowan, B.Sc. (Agric.).

Crop Competitions.—Mr. W. S. Kelly (Deputy Chairman of the Board) referred to the inauguration of crop competitions for the various wheat-growing areas of the State. Mr. Kelly stated that the Minister was favorably disposed to the scheme. It was necessary that no delay should occur in getting the matter before the farming community. The Director of Agriculture (Professor Arthur J. Perkins), the Deputy Chairman of the Board (Mr. W. S. Kelly), and the Secretary (Mr. H. J. Finnis) were appointed a committee to discuss the proposal with the Minister of Agriculture.

Representative of the Board on the Advisory Council of Education.—The Principal of the R.A.C. (Mr. W. J. Colebatch) was nominated to represent the Advisory Board of Agriculture on the Advisory Council of Education.

Registration of Bulls.—The North Booborowie Branch of the Agricultural Bureau recently asked the Board what steps were being taken to enforce legislation requiring the registration of bulls, and stated that there were several animals over the age of six months at large on the stock roads in that district. The matter was referred to the Minister of Agriculture. A report was secured from the nearest police officer, and the Board decided that a copy of this should be sent to the Branch in question.

British Empire Exhibition Council.—The Chairman (Mr. W. S. Kelly) and Mr. A. M. Dawkins were appointed to represent the Advisory Board of Agriculture on the British Empire Exhibition Council.

Date of Next Board Meeting.—It was decided that the next meeting of the Board should be held on Wednesday, March 7th.

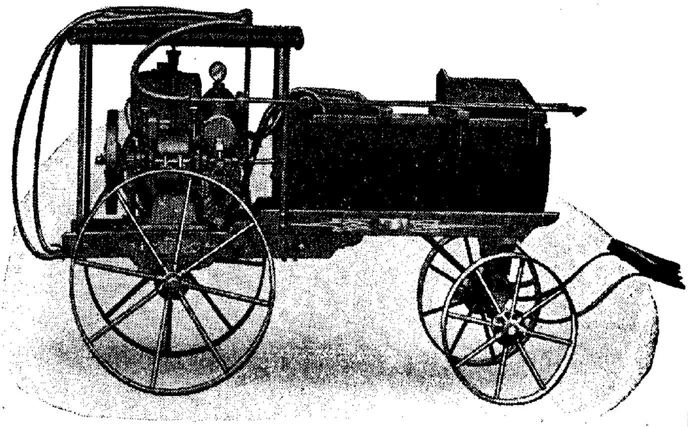
Branding Potato Bags.—The Rendelsham Branch asked that the Advisory Board should endeavor to bring about the introduction of legislation compelling growers of potatoes to print their name and address on all bags of potatoes marketed. The Secretary of the Board (Mr. H. J. Finnis) stated that he had interviewed the Horticultural Instructor (Mr. George Quinn), who doubted the advisability of introducing legislation. Mr. Quinn believed it would be better for the growers to act co-operatively. Mr. H. Wicks said

FRUITGROWERS & PASTORALISTS

METTERS'

Nufrend Spraying Outfits

Are manufactured entirely in our works, and can be supplied to fill the requirements of the small grower as well as the largest requirements.



ILLUSTRATING OUR TYPE B. POWER OUTFIT.

ALL PARTS OF PUMP ARE STANDARDIZED AND MANUFACTURED IN METAL TO RESIST ACID COMPOUNDS.

CALL AND INSPECT, OR WRITE FOR COMPLETE ILLUSTRATED CATALOGUE, POSTED TO ANY ADDRESS.

METTERS, Limited,
142, RUNDLE STREET,
ADELAIDE.

SPECIAL NOZZLE FOR BLOW-FLY PEST.

something should be done on lines similar to the action taken with regard to the topping up of fruit. It was decided that the Branch should be advised to adopt the suggestion offered by Mr. Quinn. It was also suggested that the question might be brought forward for discussion at the 1923 Conference of South-Eastern Branches of the Agricultural Bureau.

Transportation of Stud Stock.—The Chairman (Mr. W. S. Kelly) referred to the need for more reasonable freight rates for stud stock imported into Australia. He mentioned the valuable assistance given to the breeders of stud stock in South Africa by the Government of that colony, and added that very considerable expenses were incurred in introducing stud animals from England to Australia. He thought that the Minister of Agriculture might be asked to communicate with the Federal Government on the matter. The Chairman and Secretary were instructed to prepare a letter for transmission to the Federal Government, and present it at the next meeting for the approval of the Board.

New Branches.—Approval was given for the formation of Branches of the Bureau at MacGillivray (Kangaroo Island) and Calca (West Coast), with the following gentlemen as foundation members:—MacGillivray—R. Wheaton, A. J. Nicholls, E. C. and H. Segar, A. Brumby, W. Adams, H. and J. Wehlack, H. J. Wiadrowski. Calca—T. P. Cash, P. C. Roberts, E. Stokes, R. Plush, E. J. and T. Kelsh, P. Murphy, W. J. and F. L. Roberts, J. W. Freeman, J. Moore, A. H. Chester, D. Murphy, W. Chester, E. A. Roberts, G. and P. Cash, J. H. Kelsh, E. Murphy, J. E. Roberts, M. and I. Cash, F. Coleman, J. Murphy, T. Beattie, A. H. Freeman.

Branches to be Closed.—It was decided to close the Morgan and Bowhill Branches.

New Members.—The following names were added to the rolls of existing Branches:—Winkie—D. K. McMinn, A. H. Stahl; MacGillivray—R. Wheaton, A. J. Nicholls, E. C. Segar, H. Segar, A. Brumby, W. Adams, H. Wehlack, J. Wehlack, H. J. Wiadrowski; Younghusband—W. G. McNeil; Owen—Wm. Sorrell; Meadows—A. S. Stone, W. Wilson, P. H. Beames; Block E—E. T. Riddell; Lameroo—N. A. Knutsen; Mount Gambier—F. A. Aslin, F. Button; Williamstown—S. R. Morley; Currency Creek—G. W. Ritchie; Barmera—W. Anderson, H. R. Williams, P. McInerney, E. Anderson, R. J. Attrivell, T. R. Borden, F. Clark, O. A. Clark, E. Farmer, A. D. Heath, E. W. LeCornu, T. McRae, E. D. Sims, J. W. Taylor, R. C. Wilson; Lipson—F. Brougham; Kalangadoo—L. P. Sutton; Balhannah—C. Duncan, L. Mattner, C. Mattner, A. Bottroff, H. Usher, R. Prosser, W. Read; Hookina—J. H. Westrop; Millicent—F. T. Clifford, J. E. White; Lone Gum and Monash—R. Nixon, F. H. Nixon, H. P. Holt, J. G. W. Wilson, A. Hosking, J. W. Cornwall, J. R. McKnight, C. W. Teasdale, H. A. Venz, G. T. Evans, A. Hallam; Monarto South—O. Bretag; Blackheath—G. Gough; Lyndoch—R. Nankervis; Willowie—O. Tozer, A. J. Faulis; Tarcowie—H. Grady, E. Leibich; Maitland—R. B. Kelly, L.V.Sc.; Bute—B. P. Read, C. G. Waston, L. Waston.

THE AGRICULTURAL OUTLOOK.

REPORT FOR THE MONTH OF FEBRUARY.

The following report on the general agricultural condition and outlook of the area represented by the Government Experimental Farm mentioned below has been prepared by the manager:—

Turretfield.—Weather—This month has been exceptionally dry, no rain being registered. Several spells of hot weather have been experienced. Crops—The grape crop is ripening rapidly, and wine grape cutting has started. A fair quantity of currants has been cut and dried. Natural Feed—Stock are feeding in the stubbles, and these are being eaten out. Stock in fair to good order. Pests—Starlings and birds are giving trouble in the vineyards. Miscellaneous—A fair quantity of metal is being carted for road repairing.

TO ADVERTISERS.

The "Journal of Agriculture" has a circulation of over 7,100 Copies monthly amongst the Cultivators of the Soil in South Australia, and consequently is a valuable medium for advertising Farm and Orchard Supplies and Requisites.

Particulars as to charges for space on application to the Department of Agriculture, Adelaide.

DAIRY AND FARM PRODUCE MARKETS

A. W. Sandford & Co., Limited, reported on March 1st, 1923:—

BUTTER.—As anticipated in our last report that, owing to the falling off in supplies of choicest butter, importations would be necessary. This has been realised, especially during the latter part of the month, when extremely high temperatures ruled. The quality of the imported article has turned out satisfactorily, and given satisfaction to traders. London market has considerably advanced, and this has had the effect of causing higher prices to rule through Australia, and from the present outlook high prices are likely to rule throughout the coming winter. There is still a surplus of second and third grades, which are being forwarded to London. At the close of the month prices ruling were:—First grade to choicest factory and creamery fresh butter, in bulk, 1s. 8¾d. to 1s. 9¼d.; prints, ¾d. extra; seconds, 1s. 4½d. to 1s. 5d.; thirds, 1s. 3½d. to 1s. 4d.; best separators and dairies, 1s. 5½d. to 1s. 8d.; fair quality, 1s. 3½d. to 1s. 5d.; store and collectors, 1s. 2d. to 1s. 3d.; heated lots lower.

EGGS.—Heavy quantities have come forward, but owing to the poorness of quality no export business has been done, so that local market has been really oversupplied, and difficulty has been experienced sometimes to sell eggs that have not been up to standard. Values were stationary for most part of the month, but at the latter end firmed 1d. per dozen. Fresh hen, 1s.; duck, 1s. 1d.

CHEESE.—Slight fluctuation occurred during the month. London continues to buy freely, also Western Australia, and the local trade has been well maintained, and in consequence stocks are not accumulating, present values being from 10d. to 11d. for large to loaf.

HONEY.—Values have been very stationary, the take this season being an exceptionally heavy one. However, as nice export orders were booked, this helped to maintain values, prime clear extracted selling at 3½d. to 3¾d.; second grades continue very slow of sale at 2d.; beeswax, 1s. 6d., for clear samples.

ALMONDS.—The high prices that have ruled here for some considerable time have attracted importations, and with the new crop coming on, the market values have eased, present prices ruling are:—Brandis, 10½d.; mixed softshells, 9½d. to 10d.; hardshells, 4½d.; kernels, 1s. 6d.

BACON.—The hot weather has interfered with the demand. Supplies have shown marked improvement, but the easing has only been very slight, more especially in sides, sides selling at 12½d. to 13d.; hams, 1s. 6d.; middles, 1s. 3d.; rolls, 1s.; lard in packets, 8d.; in bulk, 7d. to 7½d.

LIVE POULTRY.—During the month forwardings have been heavy, but it is pleasing to report that the demand has been quite equal to all offering. In fact, much heavier quantities could be placed without affecting prices. Turkeys are very scarce, and importations have been necessary to meet trade requirements. Prices realised for birds fit to kill have been satisfactory to consignors, and as stocks held in cold store are very light, good prices are assured for some time to come. Crates obtainable on application. The following prices ruled at the last market for the month:—Prime roosters, 5s. to 7s. 3d. each; nice condition cockerels, 3s. 6d. to 4s. 9d.; poor condition cockerels, 2s. to 3s.; plump hens, 3s. 3d. to 5s. 3d.; medium hens, 2s. to 3s.; some pens of weedy sorts lower; geese worth 4s. to 5s. 6d.; ducks, good condition, 4s. 6d. to 7s.; fair condition, 2s. 10d. to 4s.; ducklings lower; turkeys, prime condition, 1s. 5d. to 1s. 10d. per lb. live weight; fair condition, 1s. to 1s. 4d. per lb.; fattening sorts lower; pigeons, 7½d.

POTATOES.—Markets during the month have been somewhat depressed, owing to the heavy quantities offering, both local and Victorian, and at times there has been somewhat of a glut. Values at the close of the month were:—Locals, 6s. to 7s. per cwt.; Victorians, 7s. to 8s. per cwt., on trucks Mile End.

ONIONS have also been in full supply, and values are from 7s. to 9s. per cwt., on trucks Mile End.

HUPMOBILE

Known everywhere as

"The Comfort Car"

BECAUSE

It is comfortable to ride in.

BECAUSE

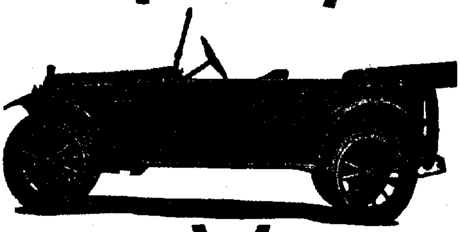
Its reliability gives one a comfortable feeling of security.

BECAUSE

Its known economy contributes very materially to one's mental comfort.

FULLEST PARTICULARS UPON ENQUIRY.

PHOENIX MOTOR COY.
LIMITED,
SOLE AGENTS,
112-120,
PIRIE STREET,
ADELAIDE.



IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., JANUARY, 1923.

IMPORTS.

Interstate.

Apples (bushels)	3
Bananas (bushels)	3,423
Currants (bushels)	42
Mangoes (bushels)	5
Oranges (bushels)	3
Passion fruit (bushels)	140
Peaches (bushels)	2
Pineapples (bushels)	87
Plums (bushels)	1
Tomatoes (bushels)	1
Onions (bags)	639
Potatoes (bags)	9,827
Bulbs (packages)	22
Plants (packages)	28
Seeds (packages)	20
Wine casks, empty (number)	3,353

Fumigated—36 empty wine casks.

Rejected—51bush. of bananas, 5bush. of mangoes, and 1bush. of tomatoes.

Overseas.

Federal Quarantine Act.

Seeds, &c. (packages)	1,323

EXPORTS.

Federal Commerce Act.

Fifty (50) packages of citrus fruit, 1,407 packages of dried fruit, 5 packages of preserved fruit, 19 packages of honey, and 21 packages of jam were exported to oversea markets. These were consigned as follows:—

London.

Dried fruit (packages)	1,202
Jam (packages)	16

New Zealand.

Dried fruit (packages)	151
Citrus fruit (packages)	50

India and East.

Dried fruit (packages)	54
Jam (packages)	5
Preserved fruit (packages)	4
Tomato sauce (packages)	1
Honey (packages)	19

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of February, 1923, also the average precipitation to the end of February, and the average annual rainfall.

Far North and Upper North.

Station.	For Feb., 1923.	To end Feb., 1923.	Av'ge. to end Feb.	Av'ge. Annual Rainfall
odnadatta	—	—	1·39	4·93
arree	—	0·06	0·94	6·14
arina	—	0·30	1·12	6·73
opley	0·09	0·11	1·20	8·50
eltana	0·01	0·06	1·45	9·05
inman	0·04	0·12	1·79	12·61
arcoola	—	—	1·20	7·91
ookina	0·40	0·40	1·18	13·60
awker	0·21	0·27	1·24	12·93
ilson	—	—	1·34	12·56
ordon	—	0·09	1·46	11·60
orn	0·08	0·29	1·36	14·24
ort Augusta	0·04	0·07	1·07	9·68
ort Augusta West	0·04	0·09	1·00	9·74
ruce	—	—	1·16	10·76
ammond	0·10	0·19	1·33	11·90
ilmington	0·05	0·08	1·51	18·44
illowie	0·08	0·18	1·24	12·44
elrose	0·05	0·26	2·14	23·88
oleroo Centre	—	0·05	1·44	15·67
ort Germein	0·05	0·14	1·18	12·93
irrabara	0·06	0·09	1·37	19·85
ppila	0·03	0·74	1·32	15·01
adock	—	0·40	1·31	11·50
arrieton	0·06	0·15	1·42	12·91
ohnburg	0·06	0·14	1·07	10·85
arelia	0·08	0·17	1·49	13·56
roroo	0·10	0·26	1·72	13·75
ackara	—	0·08	1·48	11·85
ack Rock	0·09	0·94	1·41	12·73
olta	—	—	1·56	12·10
eterborough	0·10	0·70	1·50	13·53
ngala	0·11	0·50	1·38	14·51

Lower North-East.

Station.	For Feb., 1923.	To end Feb., 1923.	Av'ge. to end Feb.	Av'ge. Annual Rainfall
unta	—	—	1·40	8·93
aukaringa	—	—	1·35	8·61
annahill	—	0·04	1·42	8·79
ckburn	—	0·07	1·33	8·42
oken Hill, N.S.W.	—	0·13	1·59	10·08

Lower North.

Station.	For Feb., 1923.	To end Feb., 1923.	Av'ge. to end Feb.	Av'ge. Annual Rainfall
rt Pirie	0·15	0·49	1·16	13·55
rt Broughton	—	0·35	1·16	14·27
te	0·03	0·04	1·12	15·80
ra	0·10	0·51	1·36	18·25
towie	0·03	0·55	1·37	17 19
estown	0·13	0·81	1·29	17·86
daleer W.Wks.	—	0·41	1·29	18·05
stone	0·09	0·69	1·25	16·22
[illegible]	0·02	0·22	1·25	15·93
[illegible]	0·08	0·24	1·36	18·50
dy	0·05	[illegible]	1·19	16·43
ll	0·05	0·81	[illegible]	16·93

Lower North—*continued.*

Station.	For Feb., 1923.	To end Feb., 1923.	Av'ge. to end Feb.	Av'ge. Annual Rainfall
Spalding	0·06	0·59	1·33	20·41
Gulnare	—	0·47	1·34	19·34
Yacka	0·03	0·26	1·09	15·45
Koolunga	—	0·30	1·25	15·87
Snowtown	0·07	0·25	1·11	16·05
Brinkworth	0·21	0·86	1·10	16·26
Blyth	0·19	0·37	1·28	16·96
Clare	0·16	0·79	1·63	24·60
Mintaro	0·20	0·54	1·31	23·40
Watervale	0·08	0·48	1·63	27·44
Auburn	0·10	0·41	1·80	24·30
Hoyleton	—	0·10	1·29	17·85
Balaklava	0·05	0·28	1·26	15·91
Port Wakefield	0·08	0·21	1·21	13·29
Terowie	0·09	0·13	1·54	13·78
Yarcowie	0·12	0·26	1·41	14·18
Hallett	0·05	0·24	1·32	16·47
Mount Bryan	0·30	0·42	1·27	16·74
Kooringa	0·05	0·44	1·43	18·06
Farrell's Flat	0·04	0·24	1·38	18·97

West of Murray Range.

Station.	For Feb., 1923.	To end Feb., 1923.	Av'ge. to end Feb.	Av'ge. Annual Rainfall
Manoora	0·05	0·32	1·16	18·78
Saddleworth	0·05	0·46	1·44	19·74
Marrabel	0·03	0·69	1·29	19·67
Riverton	0·06	0·37	1·42	20·71
Tarlee	—	0·43	1·38	17·81
Stockport	0·07	0·42	1·34	16·49
Hamley Bridge	0·06	0·42	1·41	16·52
Kapunda	0·07	0·48	1·54	19·85
Freeling	0·02	0·49	1·36	17·90
Greenock	0·02	0·63	1·45	21·60
Truro	0·05	0·41	1·41	20·80
Stockwell	0·05	0·36	1·42	20·31
Nuriootpa	0·02	0·36	1·43	20·99
Angaston	—	0·25	1·46	22·48
Tanunda	0·07	0·26	1·48	22·20
Lyndoch	—	0·23	1·39	22·88
Williamstown	0·14	0·39	1·54	27·47

Adelaide Plains.

Station.	For Feb., 1923.	To end Feb., 1923.	Av'ge. to end Feb.	Av'ge. Annual Rainfall
Mallala	0·04	0·32	1·30	16·66
Roseworthy	0·30	0·62	1·29	17·29
Gawler	—	0·37	1·40	19·09
Two Wells	0·05	0·31	1·20	15·83
Virginia	0·03	0·48	1·27	17·31
Smithfield	—	0·37	1·20	17·16
Salisbury	—	0·84	1·34	18·45
North Adelaide	0·01	0·69	1·38	22·22
Adelaide	0·06	0·77	1·37	20·05
Glenelg	0·08	0·69	1·22	18·37
Brighton	0·08	0·67	1·43	21·34
Mitcham	0·02	0·79	1·42	24·06
Glen Osmond	0·08	0·98	1·56	25·78
Magill	0·06	0·92	1·55	25·24

RAINFALL—*continued.*

Station.	For Feb., 1923.	To end Feb., 1923.	Av'ge. to end Feb.	Av'ge. Annual Rainfall
MOUNT LOFTY RANGES.				
Teatree Gully	0·05	0·98	1·60	27·65
Stirling West	0·14	1·26	2·47	46·59
Uraidla	0·20	1·14	2·22	43·92
Clarendon	0·08	0·65	1·88	32·98
Morphett Vale	0·13	0·64	1·45	22·79
Noarlunga	0·06	0·54	1·26	20·35
Willunga	0·21	0·51	1·48	25·89
Aldinga	0·21	0·56	1·18	20·35
Myponga	0·10	1·04	1·79	29·16
Normanville	0·16	0·64	1·16	20·61
Yankalilla	0·12	0·69	1·23	23·10
Mount Pleasant	0·06	0·42	1·58	27·16
Birdwood	0·02	0·43	1·76	29·33
Gumeracha	0·07	0·83	1·83	33·29
Millbrook Reservoir	0·05	1·00	—	—
Tweedvale	0·03	0·55	1·77	35·55
Woodside	0·03	0·55	1·79	32·11
Ambleside	0·14	0·55	1·79	34·67
Nairne	0·08	0·40	1·81	28·42
Mount Barker	0·25	0·78	1·89	31·18
Echunga	0·11	0·62	1·83	32·96
Macclesfield	0·13	0·57	1·66	30·57
Meadows	0·14	0·74	1·81	36·04
Strathalbyn	0·06	0·28	1·38	19.32
MURRAY FLATS AND VALLEY.				
Meningie	0·11	0·56	1·21	18·66
Milang	0·09	0·33	1·21	15·40
Langhorne's Creek	0·04	0·29	1·00	14·61
Wellington	0·06	0·48	1·29	14·77
Tailem Bend	0·10	0·46	1·16	14·55
Murray Bridge	0·05	0·23	1·15	13·93
Callington	0·04	0·19	1·27	15·42
Mannum	0·18	0·23	0·98	11·64
Palmer	—	—	1·08	15·47
Sedan	0·03	0·03	1·15	12·29
Swan Reach	0·06	0·15	1·15	11·09
Blanchetown	0·04	0·04	1·09	10·16
Eudunda	0·01	0·79	1·34	17·54
Sutherlands	—	0·15	0·90	11·19
Morgan	0·07	0·27	0·99	9·30
Waikerie	—	—	1·35	9·91
Overland Corner	0·02	0·02	1·16	11·07
Loxton	0·03	0·24	1·76	12·63
Renmark	—	0·02	1·28	11·09
WEST OF SPENCER'S GULF.				
Eucla	0·12	0·81	1·50	10·02
White Well	0·07	0·20	0·93	9·08
Fowler's Bay	0·08	0·88	0·88	12·16
Penong	0·04	0·09	1·16	12·49
Ceduna	0·11	0·38	0·93	10·36
Smoky Bay	0·10	0·52	1·02	—
Petina	0·15	0·42	0·94	13·34
Streaky Bay	—	0·52	0·97	15·10

Station.	For Feb., 1923.	To end Feb., 1923.	Av'ge. to end Feb	Av'ge. Annual Rainfall
WEST OF SPENCER'S GULF—*continued.*				
Talia	0·15	0·40	0·71	15·
Port Elliston	0·15	0·41	0·82	16·
Cummins	—	0·25	0·93	18·
Port Lincoln	0·11	0·36	1·07	19·
Tumby	0·11	0·50	0·74	14·
Carrow	0·11	0·33	1·21	14·
Arno Bay	0·06	0·54	1·00	13·
Cowell	0·08	0·35	1·03	11·
YORKE PENINSULA.				
Wallaroo	0·05	0·05	1·04	14·
Kadina	0·06	0·06	0·99	16·
Moonta	0·02	0·32	1·01	15·
Green's Plains	0·10	0·28	0·96	18·
Maitland	0·10	0·58	1·13	20·
Ardrossan	0·19	0·74	0·93	14·
Port Victoria	0·06	0·70	0·92	15·
Curramulka	0·06	0·53	1·03	18·
Minlaton	0·13	0·55	0·94	17·
Brentwood	0·05	0·31	0·89	15·
Stansbury	0·02	0·49	1·02	17·
Warooka	0·06	0·55	0·94	17·
Yorketown	0·05	0·38	0·91	17·
Edithburgh	0·07	0·58	0·98	16·
SOUTH AND SOUTH-EAST.				
Cape Borda	0·16	0·64	1·14	25·
Kingscote	0·17	0·35	0·98	19·
Penneshaw	0·24	0·53	1·44	19·
Victor Harbor	0·10	0·47	1·45	21·
Port Elliot	0·09	0·59	1·38	20·
Goolwa	0·06	0·41	1·34	17·
Pinnaroo	0·02	0·21	1·60	15·
Parilla	—	0·10	1·04	14·
Lameroo	0·07	0·37	1·22	16·
Parrakie	0·04	0·36	0·99	14·
Geranium	0·07	0·57	1·02	16·
Peake	0·13	0·60	1·45	16·
Cooke's Plains	0·13	0·57	1·04	15·
Coomandook	0·12	0·56	1·07	17·
Coonalpyn	0·12	0·79	1·19	17·
Tintinara	0·22	0·61	1·15	18·
Keith	0·11	0·65	1·30	18·
Bordertown	0·16	0·42	1·38	19·
Wolseley	0·10	0·41	1·18	18·
Frances	0·20	0·55	1·27	19·
Naracoorte	0·25	0·66	1·48	22·
Penola	0·19	0·93	1·82	26·
Lucindale	0·18	0·60	1·27	22·
Kingston	0·15	0·98	1·34	24·
Robe	0·03	0·90	1·43	24·
Beachport	—	0·44	1·71	20·
Millicent	0·03	0·98	1·87	29·
Kalangadoo	0·16	1·25	[illegible]	[illegible]
Mount Gambier	[illegible]	0·93		

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings	
		Mar.	April.
Alawoona	*	—	—
Aldinga	*	28	25
Amyton	*	5	2
Angaston	*	—	—
Appila-Yarrowie	*	—	—
Arthurton	*	—	—
Ashbourne	776	—	—
Balaklava	*	10	14
Balhannah	776	2	6
Barmera	*	27	—
Beetaloo Valley	740	—	—
Belalie North	*	3, 31	28
Berri	*	—	4
Big Swamp	*	—	—
Blackheath	776	3, 31	27
Black Springs	745	—	—
Blackwood	*	19	16
Block E	771	—	—
Blyth	740	3	7
Booleroo Centre	*	2, 30	27
Borrika	*	—	—
Bowhill	*	—	—
Brentwood	750	1, 29	26
Brinkley	*	3, 31	28
Bundaleer Springs	*	—	—
Burra	*	—	—
Bute	*	27	—
Butler	*	—	—
Cadell	*	—	—
Canowie Belt	*	—	—
Carrow	*	1, 29	26
Cherry Gardens	‡	27	—
Clanfield	*	—	—
Clare	*	2	—
Clarendon	*	26	30
Claypan Bore	*	—	4
Cleve	*	28	25
Collie	755	—	—
Colton	*	23	27
Coomandook	*	28	25
Coonalpyn	*	2, 30	—
Coorabie	*	—	—
Cradock	*	—	—
Crystal Brook	*	3, 31	28
Currency Creek	772	—	—
Cygnet River	776	1, 29	26
Darke's Peak	757	28	25
Dawson	*	—	—
Denial Bay	*	—	—
Edillilie	*	31	28
Elbow Hill	*	6	3
Euralia	*	—	—
Farrell's Flat	*	—	—
Frances	777	31	28
Gawler River	*	1	3
Georgetown	*	3, 31	28
Geranium	*	31	28
Gladstone	742	—	—
Glencoe	*	—	—
Glossop	758	28	25
Goode	*	—	4
Green Patch	*	26	30
Gumeracha	*	5	2, 30
Halidon	*	—	—
Hartley	773	28	25
Hawker	*	6	3
Hilltown	*	—	—
Hookina	739	1, 29	26
Inman Valley	*	—	—
Ironbank	774	3, 31	28
Kadina	*	—	—
Kalangadoo	780	10	14
Kangarilla	*	—	—
Kanmantoo	*	3	28
Keith	*	—	—
Ki Ki	*	—	—
Kilkerran	*	—	—
Kimba	*	—	—
Kingscote	*	—	—
Kingston-on-Murray	*	—	—
Kongorong	780	1, 29	26
Koonibba	*	2, 30	27
Koppio	*	26	30
Kybybolite	*	1, 29	26
Lake Wangary	756	3, 31	28
Lameroo	762	2, 30	—
Laura	*	3, 31	28
Leighton	*	—	—
Lenswood and Forest Range	*	—	—
Lipson	*	—	—
Lone Gum and Monash	771-2	28	25
Lone Pine	746	—	—
Longwood	*	—	—
Loxton	*	—	—
Lucindale	*	—	—
Lyndoch	746, 750	29	26
McLachlan	‡	3	7
Maitland	754	1, 29	26
Mallala	*	19	16
Maltee	*	2, 30	27
Mangalo	*	—	—
Marama	*	—	—
Meadows	*	28	—
Meningie	*	—	—
Milang	775	10	14
Millicent	*	3	7
Miltalie	*	3, 31	28

INDEX TO AGRICULTURAL BUREAU REPORTS—*continued.*

Branch.	Report on Page	Dates of Meetings.	
		Mar.	April.
Mindarie	*	5	2
Minlaton	*	2, 30	27
Minnipa	*	28	25
Monarto South	772	31	28
Moonta	*	2, 30	27
Moorak	*	1, 29	27
Moorlands	*	—	—
Moorook	*	—	—
Morchard	740	3, 31	28
Morgan	*	—	—
Morphett Vale	*	1, 29	5
Mount Barker	*	28	25
Mount Bryan	*	—	—
Mount Byran East	*	—	—
Mount Compass	*	—	—
Mount Gambier	‡	10	4
Mount Hope	756	3, 31	28
Mount Pleasant	776	—	—
Mount Remarkable	*	—	—
Mundalla	*	—	25
Murray Bridge	*	—	—
Mypolonga	*	28	25
Myponga	*	—	—
Nantawarra	*	1, 29	26
Naracoorte	780	10	14
Narridy	*	3, 31	28
Narrung	*	3, 31	28
Neeta	*	—	—
Nelshaby	742	3, 31	28
Netherton	762	—	—
North Booborowie	*	—	—
North Bundaleer	*	—	—
Northfield	*	—	—
Nunkeri and Yurgo	*	4	1
O'Loughlin	*	28	25
Orroroo	*	—	—
Owen	750	2, 30	27
Parilla	762	2	27
Parilla Well	*	5	2, 30
Parrakie	*	—	—
Paruna	*	—	—
Paskeville	*	2, 30	27
Pata	*	—	—
Penola	*	3	7
Petina	*	31	28
Pinnaroo	*	2, 30	27
Pompoota	764, 772	14	11
Port Broughton	*	2, 30	27
Port Elliot	*	17	21
Port Germein	*	3	7
Pygery	*	—	—
Ramco	*	26	30
Rapid Bay	*	3	28
Redhill	*	—	—
Rendelsham	780	28	25
Renmark	768	1, 29	26
Riverton	*	—	—
Riverton (Women's)	*	—	—
Roberts and Verran	757	1	26
Rockwood	*	26	30
Rosedale	*	—	—
Rosy Pine	*	—	—
Saddleworth	*	—	—
Saddleworth (Women's)	*	—	—
Salisbury	750	6	3
Salt Creek	*	—	—
Sandalwood	*	—	—
Shoal Bay	776	—	—
Smoky Bay	‡	—	—
Spalding	*	—	—
Stockport	748	—	—
Streaky Bay	*	—	—
Strathalbyn	*	27	—
Talia	757	12	9
Tantanoola	*	3, 31	28
Taplan	*	3	7
Tarcowie	‡	27	—
Tarlee	*	—	—
Tatiara	780	16	21
Two Wells	749	—	—
Uraidla & Summertown	*	5	2
Veitch	*	—	—
Virginia	*	—	—
Waikerie	*	—	—
Wall	*	—	—
Wanbi	*	—	—
Warcowie	*	—	—
Watervale	*	—	—
Weavers	*	26	30
Whyte-Yarcowie	744	—	—
Wilkawatt	*	3, 31	28
Williamstown (Women's)	‡	7	4
Williamstown	750	30	—
Willowie	*	28	25
Wilmington	*	28	25
Windsor	749	6	3
Winkie	*	—	—
Wirrabara	744	10	7
Wirrega	*	—	—
Wirrilla	*	3, 31	28
Wolowa	*	—	—
Wudinna	*	—	—
Wynarka	*	—	—
Yabmana	*	—	—
Yacka	*	27	—
Yadnarie	*	27	—
Yallunda	*	—	—
Yaninee	*	—	—
Yeelanna	*	3, 31	28
Yongala Vale	*	—	—
Yorketown	*	—	—
Younghusband	*	1, 29	—

* No report received during the month of February. ‡ Held over until next month.

HE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

HOOKINA (Average annual rainfall, 12in.).

February 1st.—Present: 12 members and nine visitors.

Sore Shoulders.—In the course of a short paper dealing with this subject Mr. A. J. Lindblom said that to prevent horses getting sore shoulders, the farmer should see that all dry sweat was brushed off the shoulders before harnessing the team. The collars should be buckled on fairly tightly, with well-fitting hames, because the majority of horses held their heads up higher while they were being yoked than they did when working. If a horse did get sore shoulders he thought it a good plan to pad the collar on each side of the sore in order to prevent the collar chafing the shoulders. Warm water and soap were very good for shifting scabs, and would help to heal the sores. A horse that had bad shoulders should be turned out until cured. In the discussion that followed Mr. B. A. Murphy considered the best way to prevent sore shoulders was to work the team for short periods until the horses became hardened to the work. The shoulders should be washed in the evening with a fairly strong solution of cold water and salt. If the collars should be worked fairly loosely for a start the teamster should see that the hames were correctly adjusted. An application of gall cure would sometimes heal the sores, and a few days' spell did the horse a lot of good. Mr. J. Murphy recommended working the horses in fairly tight-fitting collars in order to reduce the danger of chafing. Mr. H. Lloyd said it was advisable to have a collar to fit the horse. If one of the team happened to get a sore shoulder whilst on the road, a little axle grease taken from the wheels was an excellent remedy. Mr. J. H. Westrop said an application of liquid obtained from steeping wattle bark in water was an excellent preparation to harden the shoulders of a colt. If a horse did get a sore shoulder a little lime rubbed on the shoulder immediately the collar was removed would effect a cure. Other members generally agreed that prevention was better than cure. The collars should be well stuffed and not allowed to become hard. There was no sure cure for sore shoulders except that of turning he horse out for a spell.

TARCOWIE (Average annual rainfall, about 15½in.).

January 30th.—Present: 15 members.

Question Box.—The meeting took the form of a "Question Box." Several subjects were introduced for discussion. The first question put forward was "Is a dressing of 75lbs. or 80lbs. of super to the acre sufficient for this district?" Members were of the opinion that nothing less than from 90lbs. to 100lbs. of manure to the acre should be applied. As to whether any benefit would be obtained from working the fallow during the period between harvest and seeding, Mr. J. Ninnes was of the opinion that such a practice was not advisable unless the growth of weeds on the fallow was such that it could not be kept in check by sheep. If the land was rough a ribbed roller could be brought into operation. Mr. C. A. Kotz considered that if the land had a hard and crusty surface it could be worked with advantage. Mr. D. Smith thought no benefit was to be derived from working the land whilst it was in a dry condition. Regarding the most suitable varieties of trees for planting in that district, Mr. E. Howie expressed a preference for sugar gums, while Mr. J. Ninnes said he would plant pines in heavy black soil. Mr. C. Kotz said pepper trees made good growth. Several other interesting topics were also brought forward for discussion.

MORCHARD, February 3rd.—The meeting took the form of a "Question Box," when several subjects were brought forward for discussion. Speaking of the system of weighing wheat, members were of the opinion that the institution of weighbridges would give greater satisfaction than the method at present in vogue. The subjects, "Cultivating the Fallow" and "Destruction of Weeds," were also brought forward for discussion, when it was considered that a tyne cultivator did better work than the disc implement. There was a difference of opinion in dealing with the question, "Is the cultivation of the fallow, when comparatively dry, likely to lead to harmful results?" Some members thought the better plan was to wait for rain, whilst others considered that if weeds were growing on the fallow it was better to push on with cultivating and not wait for rain.

MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BEETALOO VALLEY (Average annual rainfall, 23.50in.).

Present: 10 members and two visitors.

Fencing.—The following paper was contributed at the November meeting by Mr. J. Halse:—"Good fencing is one of the most essential factors on the farm, for without well-fenced enclosures much time and loss is incurred through the stock straying to places where they are not wanted. In starting a fence I would advocate good red or blue gum strainers, not less than 18in. in diameter and 7ft. long. These should be put in the ground to the depth of 3ft., and about seven chains apart, because the wires will not slacken in a long strain as they will on a short one. For posts I prefer red gum, although good seasoned blue gum is almost equal to the former. These should be 5ft. 4in. long, and put in the ground to the depth of 21in, thus making provision for a fence of six wires 3ft. 7in. in height. The wires should be placed as follows:—Bottom wire 6in. from the ground, and the remaining five the following distances apart:—6in., 6in., 7in., 8in., 9in. The top two wires should be barbed. Where timber can be procured without any difficulty I would have the posts about six to the chain, because that will make a more substantial fence than if iron droppers are used. Where posts are not too plentiful, or have to be carted long distances, I would put them 9yds. apart, with two droppers in between. I prefer the horseshoe strainer for straining the wires. The fences should be periodically inspected, because when the wires are kept tight they assist in lengthening the life of a fence."

BLYTH (Average annual rainfall, 16.46in.).

January 13th.—Present: 14 members.

Rabbit Destruction.—In discussing this question Mr. Buzacott favored the use of the poison-cart, provided it was used simultaneously by neighbors, for unless that was done the rabbits from adjoining paddocks would soon replace those exterminated. In the discussion that followed the destroying of the warrens by ploughing was also considered useful in conjunction with poisoning.

Best Breed of Cattle for the District.—Mr. E. H. Lanyon, in dealing with this subject, advocated the cross between a beef and a good milking strain, so that if an animal failed to prove a good milker it could be turned to good commercial value for beef.

EFFICIENCY ON THE FARM

For unfailing service, efficiency, smooth running and reliability, use

Shell Lubricating Oils

These Oils flow freely under all conditions, and yet are adhesive enough to maintain their body when exposed to great heat.

Shell Farm Oil

is a high quality, amber-colored, medium-bodied Oil graded scientifically for general bearing lubrication of lighter types of agricultural machinery

Stocks held by all Leading Storekeepers

The British Imperial Oil Co. Ltd.

ALL STATES AND
NEW ZEALAND

GLADSTONE (Average annual rainfall, 16in.).

January 26th.—Present: 13 members and visitors.

The Merits of the Combined Drill and Cultivator.—The monthly meeting of the Branch was held at Mr. R. E. Lines' homestead, and in the course of an address on the above subject Mr. L. T. Hollitt characterised the combined drill and cultivator as a great labor saver, calculated to dispense with the services of one man and three horses. It was his experience that the combined implement always ensured the seed and manure being well covered and secure from the depredations of birds and mice. It would kill weeds if the ground were loose and the mechanism of the implement adjusted so as to leave a space of 5in. between each tyne. From the point of view of effective tillage he found it in every respect equal to any other cultivator. In the discussion that followed the majority of the speakers expressed themselves as not favorably disposed to the use of the machine. Mr. J. H. Sargent said that one of the results of attempting to use the combine as a weedkiller would be that the seed would be covered too deeply, and as a consequence there would be a failure in germination. Mr. C. H. Lines supported Mr. Hollitt, being of the opinion that one of the great advantages of the combine was that the seed would be sown immediately after the stirring of the soil, and consequently there would be little fear of the grain malting, but it could not be relied on as a weedkiller. Mr. Blesing considered that far more effective tillage was done by the ordinary cultivator than by the combine. The ordinary drill could be reinforced, and would get ahead of the combine. His practice was to kill the weeds with the cultivator, and then go over the land with the drill. Light dry soil might suit the combine, but it would be slavery for horses in wet soil. The matter of expense also had to be taken into consideration. In his opinion the combine was not capable of standing wear and tear to any extent, and in a few years one would need a new implement. Mr. C. H. Lines qualified his previous support by saying that the combine might prove very useful to a man farming on a small scale. Mr. J. J. Gale said the experience of one of his friends was that the use of the combine resulted in securing a good hard seed-bed, which gave a more even germination. It had the further advantage of provision being made for the removal of the seedbox, thus allowing the whole implement to be used as a cultivator. Mr. R. E. Lines considered that for the proper tilling of the soil the ordinary cultivator was unsurpassed, but there seemed a tendency nowadays to eschew good, solid, wholesome, hard work. Personally he did not favor the combine. Mr. Hollitt replied that he had extraordinary success with the combine last season. At the conclusion of the business an excellent supper was partaken of, and the host and hostess were heartily thanked for the thoughtful and kindly manner in which they had catered for the comfort of the members during the evening.

NELSHABY.

Present: 11 members and visitors.

Poultry Keeping.—Mr. J. A. Edwards read the following paper:—"Poultry is a very good side line for both the farmer and the blocker. The best returns will be obtained if the birds are properly housed and kept in yards or pens. A yard 20ft. x 10ft. will provide ample room for 10 to 12 fowls. The house should not be draughty, but well ventilated, and situated so that the sun can shine into it during the greater part of the day. A scratching pen should be provided, by placing a box about 4ft. or 5ft. square in one corner of the yard. Stable manure should be placed in the box, and if the grain is covered with manure it will provide exercise for the fowls, and keep them healthy. A fowl house should contain as little wood as possible, on account of tick. To overcome this, I suggest an old iron tank placed on iron posts. The roof could be made with reinforced concrete, which would keep the house cool in summer and warm in winter. The perches should not be raised more than 12in. to 18in. from the ground. For these, I suggest iron standards driven into the ground and 3in. x 1½in. flat timber, bored to fit on the iron standards. The perches should be removed at least once a fortnight in the warm weather, and once a month in the cool weather, and painted with equal parts of oil and kerosine to keep the ticks under control. Breeds.—For laying I prefer the White Leghorn, and for dual purpose birds the Black Orpington. The latter are good layers, good sitters and mothers, and meaty and good table birds. Crossing should be avoided if one wishes to breed laying poultry. It is not wise to allow the young cockerels to run with the hens. The cockerels should be penned up and fattened for market. Feeding.—Much depends on the feeding and care of poultry. Birds kept in confinement require bran and pollard mash in the morning and grain placed in the scratching box about 3 or 4 o'clock in the afternoon, will keep the birds scratching until it is time to go to roost. I also recommend plenty of chaffed green feed. I do not altogether favor a wet mash for cockerels or fowls. It is all right for fattening, but I prefer the dry mash for laying hens. Plenty of clean water is essential at all times, and more especially during the summer. Fowls also require a liberal supply of grit and shell. Green bone plays a very important part in egg production, and if the farmer obtains bones from the butcher and cuts them up into small pieces, the fowls will eat it readily. Two tablespoons of green bone a week per fowl for Leghorns and one tablespoon for the heavy breeds of poultry.''

Sheep on the Farm.—At a further meeting, held on January 27th, the following paper was contributed by Mr. H. Jose:—''Sheep can be kept profitably on most farms in this district. There are two points that the farmer has to consider: First, whether the flock will be managed for raising fat lambs for sale, or secondly, for wool-growing and breeding. When raising lambs for the export trade, there is always the risk of the lambs not being suitable in some years, and they are not so profitable if they have to be held over, and being of the Crossbred type, their

Farmers and Others
HAVE YOU MADE YOUR WILL?

IF you contemplate making your will, or altering your present will, call on us or write to us, when we shall be pleased to furnish you with such information as you may desire as regards our Administration of Trust Estates, and give you the benefit of our advice and experience without charge.

CONFIDENCE AND SATISFACTION.

There is no better evidence that Bagot's Executor and Trustee Company Limited is giving satisfaction in the administration of Trust Estates than the fact that a large number of beneficiaries in such estates have appointed the Company Executor of their own Wills. This practical expression of confidence in the Company has occurred in over fifty per cent. of the Estates Administered by the Company since its incorporation.

Bagot's Executor and Trustee Coy. Ltd.
22, King William Street, Adelaide.
Frank Blamey, F.F.I.A., Manager.

wool will not realise such a good price. The Crossbreds are also more troublesome on fences than the Merino. At the present price of wool, this is a consideration worthy of note. For breeding fat lambs the use of South Down or Leicester rams and Merino ewes will produce early maturing and meaty lambs. Of course, it is expensive to erect sheep-proof fences; but the price of wire is on the decline. Sheep are invaluable on the fallow. They destroy weeds, thereby often saving an extra cultivating, and they eat a variety of weeds that cattle will not touch. They eat stray heads of wheat in the stubble, and knock down the straw, making it better for burning. The sheep should be frequently changed from one paddock to another, as this helps the feed to keep fresh and sweet. Do not overstock the farm. This rule is sometimes overlooked, and is the cause of failure in some cases. The pure-bred Merino is the best sheep to keep for woolgrowing. If the sheep cut about 8lbs. or 9lbs. average, worth, say, 1s. a lb., and rear 70 per cent. or 80 per cent. of lambs, they should be worth keeping. The best time to mate the ewes is about the third week in November. Use one ram for every 50 ewes. The ewes will then start to lamb about the end of April, before the weather becomes too cold. The rams should be taken away from the ewes about the end of January. If the season continues dry, hand feeding will be necessary until green feed is available. Tail the lambs when they are about six weeks old. I consider it a good plan to have the sheep separated into two flocks, dividing wethers and hoggets from the ewes, so that all dry and aged ewes can be fattened up for sale without any difficulty. September is a good time for shearing, as it affords ample time before haymaking commences and grass seeds become too dry and troublesome. Dipping should be done about a month or six weeks after shearing. Inspect the flock every week or so, and keep a lookout for the blowfly pest in the spring. Cut away all wet wool from the crutch and the eyes. Breed from four-tooth ewes and and rams; after the ewes get 'six-tooth' fatten them for sale. The present price of wool should convince farmers of the advisability of keeping the Merino sheep. They are more contented, and not so troublesome to keep.''

WIRRABARA (Average annual rainfall, 18.91in.).

January 13th.—Present: 15 members.

Useful Hints for the Farm.—The following hints for farmers were given by Mr. T. E. Kite:—*Care of Sheepskins and Hides.*—Skins—The best method is to construct a frame, placing nails or wire every 6in. or 8in. apart, with the points protruding 2in. through the frame. Lay the rack on the ground with the points uppermost, and place the sheepskin, wool down, on the rack, pushing it into the nails. Allow it to dry before using skin paint. Place the frame with the skin attached in the shade in a nearly perpendicular position. In packing, place the skins wool to pelt. Hides—Select a clean place to kill the beast, so that it can be dragged some distance, if necessary, without damaging the hide. Care must be taken not to cut the hide and to keep it free from dirt. Throw the skin together overnight. In the morning spread it out, with the flesh part uppermost. Allow it to dry awhile before sprinkling 2lbs. or 3lbs. of salt on the hide, and in the course of an hour fold flesh to flesh, roll it into a small compass, and tie it with wire. This checks the escaping odor, and the bundle looks nice and neat, which increases its value on market day. *Care of Vehicles.*—It is most essential in the case of rolling-stock that they should track, *i.e.*, the back wheels should follow the front with sufficient lead to keep them from tacking. Wheels 5ft. high should be ¼in. closer together at the bottom than at the top. This applies to both front and back wheels. To treat cracked and perished hoofs in horses, rub the hoofs with warm suet twice weekly. Allow no grease containing salt to be placed on the leatherware of harness. Eucalyptus rubbed on sores and bites on stock is very healing.

WHYTE-YARCOWIE, February 3rd.—The meeting was devoted to a discussion on the 1922-23 harvest. Practically all members present joined in the discussion, and whilst results and experiences differed, the concensus of opinion was that considering the season, the crops generally turned out well, both as regards yield and sample. The prevalence of weeds and black oats was very noticeable, and considerable loss occurred through the unfavorable weather conditions during the harvesting period.

LOWER-NORTH DISTRICT.

(ADELAIDE TO FARRELL'S FLAT.)

BLACK SPRINGS.

January 30th.—Present: 16 members.

Care of Farm Implements.—Mr. F. Schupan read the following paper:—"Owing to the high price of farm implements and machines, it is advisable that every farmer should look after his plant. The first and most important point in this connection is the erection of a shed. This should be built with stone, and an iron roof, to reduce the danger of fire to a minimum and to prevent the nesting of birds. Machines such as the binder and harvester, before being pushed into the shed, should be thoroughly overhauled and have all the grease scraped off, and the belts taken off and oiled to prevent their breaking. . When the machine is in use, care should be taken to keep all the parts well oiled. The harvester should be oiled not less than four times in half a day, especially the main bearings. It would pay a farmer, and save a lot of time, if he had a small blacksmith's shop on the farm. The wagon or trolly and all other woodwork on vehicles and implements should receive at least one coat of paint a year. The seed-drill should never be left out during seeding without a cover was placed over the box. A few super bags sewn together, or two sheets of iron, would keep out the rain."

The Farm Garden.—One of the members read a paper on this subject, in the course of which it was stated that at least half an acre of the farm should be set aside for a garden for the cultivation of vegetables and fruit trees. He

NEPTUNE

SPECIAL OIL ENGINE CYLINDER OIL.

Recommended by leading makers of Oil Engines as
undoubtedly the Best Oil Engine Cylinder Lubricant.

REMEMBER—THE BEST OIL IS CHEAPER THAN NEW BEARINGS.

LOOK FOR THE BRAND.

ALL STORES OR

NEPTUNE OIL COMPANY, LTD.,

ST. VINCENT STREET, PORT ADELAIDE.

suggested planting early and late varieties of trees. The trees should be planted 18ft. apart, in square holes 2ft. deep. Trees such as peaches, nectarines, apricots, and plums, when received from the nursery, should be cut back to the desired height, leaving only three or four of the best and strongest limbs to form the tree. As the tree grew the number of limbs could be increased. All bruised roots should be carefully removed. He did not think it advisable to plant too many orange and lemon trees, because trees of the citrus family did not grow too well in a heavy clay. The best month in which to plant the trees was August. Young trees should be watered every two or three weeks during the first summer. A good plan was to put a layer of stable manure around the trees to keep the soil from drying too quickly. Trees should not be left to grow too high, the best plan being to train the tree to grow in the form of a vase. Peaches and nectarines should be sprayed before the blossoms opened as a protection against curl-leaf with a mixture of 2lbs. of bluestone and 2lbs. of good lime to 10galls. of water. A second spraying about half the strength of the first should be given when the leaves began to open. Water should be laid on to the vegetable plot and then it could be left to the care of the women.

LONE PINE.

January 30th.—Present: 14 members and visitors.

Beautifying the Farm Homestead.—The following paper was read by Mr. T. Lehmann:—The first important factor in beautifying a homestead is a good house. A great deal of care should be taken when choosing the site for the proposed house. For instance, the land should have a downhill grade, in order that the house can be built on a high level and kept dry. A house built of stone looks more pleasing than a house built of iron. There should be a nice netting fence enclosing the house, with space left for a flower garden in front and a vegetable garden at the back or side of the dwelling. This not only gives the place a neat appearance, but a supply of fresh vegetables in season and flowers for house decoration are always appreciated in any house. A few fruit trees of different varieties should be planted for home use. If possible, three or four acres of land should be left around the house which can be used for the necessary outbuildings, and the planting of wind breaks, shade, and shelter trees around the home. Care must be taken that they are not planted too close to the house or garden; about four chains back would be a suitable distance. These wind breaks are essential about the home, and will materially assist in securing a good supply of fruit, flowers, and vegetables. Shade and shelter are most necessary for the livestock, and for that reason hedge planting should be carried out around the stable, yards, and paddocks. Good stables are necessary, and should be erected so as to keep all live stock in a warm place during the winter months. Implements should also be well cared for, and kept clean and shaded. To keep all these things in good order, a good supply of water must be secured, and, wherever possible, it should be laid on all over the homestead, and, with a little energy the place can be kept in a respectable state of repair. A lawn always looks pleasing to the eye, and if looked after properly enhances the value of the property to a great extent. A bowling green or a croquet ground could also be made, so as to provide a little recreation for old and young after the day's work.

LYNDOCH (Average annual rainfall, 12in. to 13in.).

November 2nd.—Present: 12 members.

Development of the Grape.—The following paper was read by Mr. P. W. Burge:—"Every plant needs for its development besides sufficient nourishment a sufficiency of both warmth and moisture. These two factors, before any, are necessary for the profitable culture of the vine in any region, and they have great influence on the composition and quality of the wine produced. The vine is a plant of the temperate zones. In tropical climes the vine suffers no break in its vegetation; it bears the whole year through flowers and fruit in all stages of development. The grapes are useless for wine. Beyond the temperate zones, with the absence of sufficient heat in summer, the grapes fail to come to maturity, or repeated spring frosts such as take place in the Lilydale district in Victoria, and even the extreme winter cold, if severe enough, can prevent the proper vegetation of the vine. Even in our ranges there are places where certain varieties do not come to proper maturity, in spite of our warm summer days. The quality of the wine is greatly influenced, as a matter of course, by climatic conditions. Quite different is the wine produced from grapes which have taken a long time to come to maturity, in comparison with that from grapes ripened quickly. The latter wines do not generally possess a good constitution, are poor in acidity, 'empty,' so to say, and do not last long. Wines, however, made from slow-ripening varieties are generally superior in these districts to those made from quick-ripening varieties. Nor do the light wines possess such fine and tender qualities as those where the grapes mature but slowly. Favorable conditions for the vine are good winter rains and a warm summer. The spring must not be too cold, so that the vines can flower well and quickly. No doubt the practice of topping vines was introduced in the early days by those vignerons coming from Germany, France, and Austria, because this treatment of the vine was found necessary in those lands to obtain the ripening and sound maturity of the grapes. There every degree of heat is required to bring the grapes to perfection, besides allowing the light to penetrate well amongst the shoots. We have quite different reasons in Australia for slashing at our vines—a good practice, one would think, for hedge

BAGOT, SHAKES, & LEWIS, LTD.,
Stock and Station Agents,
Wool and Produce Brokers, Shipping Agents, General Importers and Exporters, Land, Loan, Financial, and Insurance Agents.

We are now carrying large stocks of—
SUPERPHOSPHATES.
Woolpacks. Cornsacks. Bran Bags. Twines. Fencing Wires.
Wire Netting. Galvanized Iron. Bore and Well Casing. Pipings.
Cement. Field Gates. Troughing. Sheep Dips. Sheep Shears.
Rabbit Poison. Machinery Oils.

Sole Agents in South Australia for—
"Acme" Sheep Dip. "R.I.P." Rabbit Poisons.
"Knoblo" Blowfly Oil. "King Loc" High Tension Galvanized Steel Wire.
"Reliance" Petrol Engines.

"CLAN LINE STEAMERS."

Head Office: 18, King William Street.
Motor Garage and Workshop: Light Square, Adelaide.

trimming—regardless to the effect it has on the vine. We in this country have enough heat to ripen our grapes, and in order to bring them to gradual maturity we desire them to be shaded. Let us consider the functions of the leaf and its relationship to the fruit. We all know how necessary the leaves are for the nourishment of the plant. In the first place, in the leaf there is produced starch, which when changed to sugar is stored in the leaf, and at a certain period migrates from the leaf to the remaining organs of the plant, where it is used. Then, if the leaves from any cause whatsoever, either through sickness, frost, insects, or topping, have been removed or hindered in their natural functions, any increase in the development of the grape becomes impossible. In vineyards rendered totally leafless the grapes have remained unripe, and are consequently unfit for the production of a good wine. The whole of the sugar contents found in the berry when the grapes are ripe comes from the leaves. In well aerated and moist soils a one-year old normal vine has as many as 3,000 root tip threads. It is these which come into contact with the soil and take in moisture. The pressure exerted when vines bleed at the time of pruning is equivalent to 20lbs. to the square inch on an average. The quantity of water lost is sometimes quite remarkable—in 24 hours up to a quart—and for a vine during the whole period from 5ozs. to 3½galls. What effect has this bleeding on the vines? Careful observation has proved that the loss of mineral matter in comparison with the total vegetation of the vine is hardly noticeable. Once the leaves are formed and transpiration takes place, this bleeding pressure disappears, and the opposite takes place, water being absorbed. More harm is done when the pruning is left so late that the buds have burst. A single leaf has a very large number of breathing pores. The leaf can regulate the opening and closing of these. The cells of these are the only ones that are able to produce sugar in daylight, no sugar being produced at night. Now you can understand how very important it is that you keep as many sound leaves on the vines as possible, and why, when through disease, such as odium, black spot, and downy mildew, the leaves are affected, the vine must suffer. It is impossible for grapes to ripen when the leaves are off. I cannot understand why the custom of allowing stock to feed on the vine leaves once the grapes are off is still practised on many holdings. I will just point out that at the end of summer after the removal of the vintage the vine begins to store food in the roots, trunk, canes, and buds, so that when the spring comes and the young leaves and shoots are formed they will have a store of foodstuffs to draw on before the leaves are sufficiently grown to produce more than they require. As previously pointed out, this is the main function of the leaves, and the longer they remain green in autumn, the more green there is likely to be next vintage."

STOCKPORT (Average annual rainfall, 15.89in.).

February 2nd.—Present: 10 members.

VARIETIES OF WHEAT SUITABLE TO THE DISTRICT.—Mr. F. Watts, who contributed a paper under the heading, "Advantages of Selecting Seed Wheat Suitable to the District and the Conditions at Seeding Time," said that no seed save that of the cleanest and best quality should receive any consideration at the hands of the farmer. The rate at which smut was spreading through the wheat crops of the district was a matter for alarm. It was undoubtedly due to sowing infected grain. On a good, well-worked seedbed in that district Mr. Watts was of the opinion that mid-season wheats, such as Turvey, Marshall's No. 3, Indian Red, Boadicea, Fords. Major, and Currawa, would give the best returns, with little or no risk of lodging, which was one of the main disadvantages of many of the earlier varieties of wheat. It was advisable, however, to have on hand a supply of one of the earlier varieties, say King's White, in case a late completion of the seeding could not be avoided. If the fallows had only received cultivation during seedtime, then Mr. Watts considered the farmer would be well advised to sow the grosser feeders—the early varieties. Mr. Watts's paper was well received, and gave rise to a long, instructive, and interesting discussion, which eventually turned to two topics—that of feeding-off crops to advantage and the smut problem. A few members favored feeding off crops, especially certain varieties of wheat, but the majority of members only thought it advisable to feed off under exceptional circumstances, and then not later than July. The conclusion arrived at on the smut problem was that it was desirable only to sow feed free from disease and thoroughly to pickle the grain.

TWO WELLS (Average annual rainfall, 16.36in.).

January 8th.—Present: eight members.

HARVEST REPORT FOR THE SEASON 1922-23.—Mr. J. A. Pratt presented the following report:—In this district results in many cases were very disappointing. The grain was very good, but yields were very low. The season opened with good rains about the last week in April, which gave all weeds a good early start, giving farmers a chance to clean the land for seeding. The weather during seed time was all that could be desired. From the end of April until the middle of August was almost ideal for wheatgrowing in this district. The weather from the middle of August until the last week in September was very dry and warm. I think this was too dry for our late crops, although the crops on fallow land seemed to hold their own. We had about ¾in. of rain about the end of September, which saved some of the crops from being total failures. One of the wheats grown very extensively in this district and one that turned out very well was Gluyas. Last season Florence beat it easily, but this year it held its own. The following are my results:—The first wheat I planted was Onas, drilled in the first week in May on fallow land; reaped 17 acres, which yielded 10bush. to the acre; seeded with 75lbs. of wheat and 112lbs. of super. Fourteen acres of White Essex were next drilled on fallow land, 75lbs. of wheat and 112lbs. super; this was all cut for hay, estimated to yield 2½ tons to the acre. Twelve acres of Barootа Wonder; only 4 acres left for grain, which yielded about 26bush. to the acre; hay, 2½tons. Ten acres of Daphne; 6 acres left for grain, which yielded 26bush. to the acre; hay, about 2½ tons to the acre. Twelve acres of Early Burt oats came next, all cut ready for heading. Twelve acres of Dan; this is a College wheat, and I think will do well in this district; 9 acres reaped, yielding 22bush. to the acre. This wheat was sown on the worst land in the paddock, otherwise I think it would have beaten Daphne or Baroota. It has a stiff straw and carries a splendid head. I counted as many as 48 grains in a head. It is well able to withstand rough weather. Twenty-four acres of Gluyas were reaped, which only averaged 6bush. to the acre. It was sown on land that last year proved a failure, and the crop was fed off, and sown this year with about 80lbs. of wheat and 1cwt. of super. 16 acres of Florence only yielded 5bush. to the acre, sown on land that was a failure last year, and sown this year with about 75lbs. of seed and 1cwt. of super to the acre. Six acres of Ford averaged 12bush. to the acre. This was grown on land that was cropped with oats the previous season, seeded with about 75lbs. of wheat and 1cwt. of super. This is a wheat that I think will do well in this part of the district. It is a wheat that stands up well in rough weather. Nine acres of Baroota Wonder averaged 10bush. to the acre, seeded with 75lbs. of wheat and 1cwt. of super. Thirty acres of Florence yielded 10bush. to the acre, seeded with about 80lbs. of wheat and 1cwt. of super. I finished seeding the second week in June. I have worked out the average of oats, and I find that with the overweight in each bag that they will average 43bush. to the acre.

WINDSOR.

February 13th.—Present: 13 members and three visitors.

CARE OF HORSES' SHOULDERS.—In the course of a paper dealing with this subject, Mr. W. Tonkin said the shoulders of many horses were ruined when the animals were being broken in, through ill-fitting collars or neglect on the part of the coltbreaker. When breaking in a young horse, great care should be taken to prevent the skin of the shoulders being broken, for if once broken there was always a weak spot, and one apt to become sore again. The colt should have a well-fitting, soft collar, and if there were any signs of the shoulders chafing, the animal should be turned out for a few days, or a breastplate should be substituted for the collar. That would give the shoulder that was chafed a chance to recover. The paper then described a cheap method of making a breastplate. When using a breastplate, it was advisable also to use a back band. Otherwise the horse would in all probability develop a sore neck. The same should also apply to the broken-in horse. The shoulders of horses should be examined every morning, and if any showed the least sign of being chafed or tender, the collar should be put aside, and the breastplate used, because it very seldom happened that a collar would so chafe the shoulders that a breastplate could not be used. Some horses were very tender in the skin, and it was almost impossible to work them in a collar. That class of horse generally worked well in a breastplate. Boils on the shoulders were in most cases caused by injudicious feeding of corn. Horses that were not used to grain should only have a small quantity each day to start with, and as they became accustomed to the feed the allowance could be increased. Horses that had had a long spell should be given light work for a few days, to enable their shoulders to harden or set. If that was done, there would be very little trouble with sore shoulders. Wooden collars had also proved very satisfactory for sore shoulders. In the discussion that followed, one speaker claimed that a bag breastplate, if not given due attention, would cause as many sores as a collar. A breastplate of bag, he asserted, when in use, became saturated with sweat, which, when dry, became hard and sharp, and would cut the horse. To prevent that, a bag breastplate should be washed frequently in water. Another member believed that the ability of the wooden collar to prevent sore shoulders was due to the fact that it always kept a smooth surface and an even temperature. A third speaker claimed that the number of sore shoulders would be considerably reduced by washing the shoulders with cold water every morning, before going to work. It was also asserted that if an extra horse were added to the team, when the shoulders of the others were becoming chafed, many sores would be prevented. If the team were rested for a few minutes at intervals of about an hour and a half during work, so as to allow their shoulders to cool off, sores would be reduced to a very great extent. The Hon. Secretary (Mr. H. B. White) read a report on the experimental wheat plots that are being conducted in conjunction with this Branch of the Agricultural Bureau. A discussion also took place on crop competitions.

LYNDOCH, February 1st.—An interesting evening was spent in discussing "Bird Pests and Methods for their Control." A programme of meetings was also arranged for the year ending December 20th, 1923.

OWEN, February 2nd.—Mr. W. Crawford delivered an address, "The Advantages of the Telephone," and an interesting discussion followed.

SALISBURY, February 6th.—Addresses were delivered by Messrs. Sanders and Russell, "Dry Rot" and "White Ants."

WILLIAMSTOWN, February 2nd.—The Assistant Dairy Expert (Mr. H. J. Apps) attended the meeting, and delivered an address, "The Babcock Tester in the Dairy Herd."

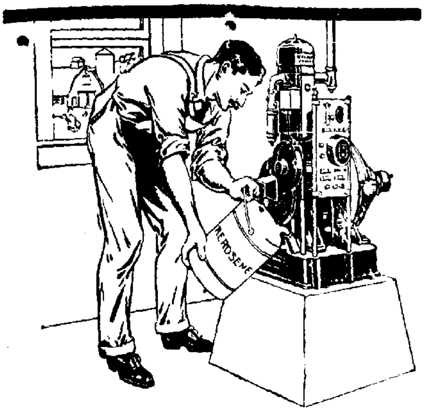
YORKE PENINSULA DISTRICT.

TO BUTE.)

BRENTWOOD.

October 10th.—Present: 14 members and three visitors.

Care and Management of Farm Horses.—The following paper was read by Mr. A. L. Vanstone:—"If horses are to be cared for, looked after, and managed properly, there is only one person who should be responsible for them, and that is the driver of the team. He should know the horses, be able to feed, care for,



Use kerosene - to give you ELECTRIC LIGHT & POWER

IT takes little time and less trouble to fill up Western Electric Power and Light than it does to fill one of those out-of-date kerosene lamps, and there are no fire risks.

Once you have filled up the Western Electric tank, and pressed the starting switch, the engine feeds itself without any fuss or attention, and supplies electric current for lighting the whole home and outbuildings.

Not only that, but it provides power for such handy domestic appliances as Vacuum Cleaner, Clothes Washer, Dish Washer, Iron, Sewing Machine, and also for driving pumps, sawbenches, and other farm machinery.

In "Western Electric" Power and Light you have the simplest, most practical, and least expensive solution to modernised life in the country.

Western Electric
POWER and LIGHT

Western Electric is the best investment, because it is bigger and stronger than plants of almost equal cost. The Battery capacity is 288 ampere hours (S.A.E. Rating) Engine 3¾ H.P. Generator 1500 Watts. Compare these features with other plants.

A Booklet describing the plant fully will be mailed free on your request. Make it NOW.

Western Electric
Co. (Aust.) Ltd.

AGENTS FOR SOUTH AUSTRALIA—

NEWTON McLAREN Ltd.,
LEIGH STREET, ADELAIDE.

CUT OUT AND MAIL TO-DAY.
Please send Illustrated Booklet, "Western Electric Power and Light."
Name ....
Address ....

and work them in the best manner possible. One of the first cares of the driver should be to see that the horses are properly fed and watered. The feed should be clean and of the best quality available. For feeding horses I prefer wooden mangers, as they are always clean and dry, and of an even temperature. Iron mangers get hot in the summer time, and in winter time seem cold and damp. The mangers should be cleaned out at frequent intervals. I like to turn the horses out in the paddock as often as possible, especially in the spring time, when the feed is good. If horses are turned into good feed they soon put on condition, and get into good heart and fettle. They will also stand a fair amount of work, especially if given a feed of hay in the morning and at night. It also saves the hay and the expense and work of chaffing. Do not be afraid to give the horses long hay occasionally, because it helps to keep their teeth and digestive organs in good order. They will not waste very much if the hay is clean and not too coarse. I prefer oaten hay. The hay should not be chaffed too finely; better a little coarse, so that it will have to be chewed by the horses. When feeding out in the paddock use good nosebags, so that the corn will not be wasted. Have plenty of clean water handy to the feeding yard or stable. I prefer the trough out of the yard, because there is not the same chance of getting chaff, &c., in the water. In the summer time water the team as often as possible. Have a good stable for the horses, with a stall for each horse, and a good yard for them. Keep the stables and yards clean. These should be cleaned out as often as possible; every few days at the least. Try to have a clean rolling yard for the horses, because a good roll always refreshes a horse and cleans the animal. Do not be afraid to use a dandy brush on the horses, especially on their shoulders. Be careful to remove all sweat and dirt, and to occasionally brush the collars. When out in the paddocks a piece of coarse bag answers the purpose of a brush to clean the shoulders. Should a horse get a sore shoulder or become chafed, see to it at once; endeavor to check the sore from spreading and effect a cure. Often the harness is at fault. Be sure and see that the harness fits properly, and use one set of harness for each horse. Always remove the mane from under the collar when harnessing the team. Do not work the horses too hard, and do not overtax their strength. Horses can only do so much in a day without getting overtired, and they are only able to draw a certain load. See that the team works evenly and that each horse does its share of the work. Do not put a small horse alongside of a bigger one and expect it to do the same work; give an advantage to the smaller animal. It is a mistake to make the horses walk too quickly, because when once a horse, and especially a heavy horse, becomes leg weary it takes a long time to recover its power. A driver must not be afraid to get off the machine or implement he is working, and walk alongside of the horses, because he will then have a good idea of the pace they are travelling. Use as little whip as possible. A team that is properly educated should need no whip. Do not work the team more than eight or nine hours each day, excepting, perhaps, during harvest time. Do not be afraid to put plenty of horses on to the machines if there are sufficient horses on the farm. When the team has finished working for a few days, do not turn them straight out into the paddock to look for their own feed, but feed them at least once a day on good solid feed. Before going on a journey with light horses let them have some solid food, even if it is only a panful of chaff or a sheaf of hay; they will do the journey a lot better. Trim the tails of the horses, but do not "bob" them too closely, and keep the mane free from knots, &s. A little care in this respect means a lot to the appearance of a horse or a team." In the discussion that followed, Mr. R. Anderson stressed the importance of good water, the troughs for which should be away from the stable. In his opinion horses should have their drink before and not after meals. The team should be cleaned in the morning, and not groomed when overheated. Mr. H. Le Poidevin did not believe in turning working horses out into green feed at night. Stable-fed horses were able to stand the work better, and were not so liable to get sore shoulders, although in his opinion sore shoulders were mainly due to the bad adjustment of the hames, &c. He agreed that wooden mangers were best, and also more economical than iron, because the former were not subject to rust. Mr. J. Boundy believed that it paid handsomely to groom the horses properly. There were also many transgressors in respect to the cleaning out of the stables, but the writer of the paper was right in that he considered the welfare of the horse before that of the driver.

Mr. A. E. Twartz agreed with the writer in regard to watering and turning out the horses on good feed during the spring. He considered it better not to have stalls in the stables, because that tended to make horses feed amicably together and be better tempered.

Cattle on the Farm.—A further meeting was held on November 2nd, when a paper on the above subject was read by Mr. D. R. Longbottom. The speaker was of the opinion that dual purpose cattle would give the best returns in that district. The Milking Shorthorn or the Friesian he considered to be excellent dual purpose stock. The cows could be turned into good beef if they did not prove profitable at the bucket, while the steers would make good beef at three years old if given sufficient fodder. He did not think it paid to rear bull calves at the present price of beef. Whilst good prices could be obtained for grain, he considered that it would be a better proposition to keep a few extra ewes to breed lambs. It was most essential to have a good bull at the head of the herd. A good bull was more than half the herd. The farmer was able to breed better stock in two generations with a pure-bred sire than in five generations with a three-quarter bred sire. In choosing a sire it was essential to see that the animal came from a thoroughly reliable strain. It was most necessary to make ample provision of some class of fodder for the cattle on the farm, and he considered ensilage was not to be excelled as a summer fodder where there was not sufficient water for irrigation. By that method of conservation the natural juices of the plants were conserved and the digestibility of the fodder increased. That was of great importance in the production of milk and in the maintenance of the health of the animal through a dry summer. He was of the opinion that in a few years' time a farm would be considered ill equipped that did not possess a well-constructed silo. Mr. J. H. Boundy, who opened the discussion, agreed with the paper, especially in regard to the keeping of a pure-bred bull, which in his

W. & W., 840

Cyclone

Metal Gates and Fences.

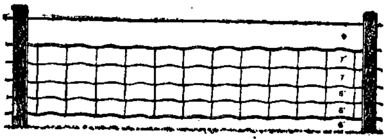


Fig. 7.—5-line Special Cyclone Spring Coil Fence.

The Cyclone Special Sheep Fence, here illustrated, is recognised as the best fence for cross-bred sheep. The top and bottom lines are No. 9 gauge heavily galvanized steel wire; intermediate line wires, No. 11 gauge, with cross ties of No. 13 gauge every 12 inches, immovably fixed to the line wires. You need fewer posts with a Cyclone Spring Coil Fence, and it is very easily erected.

ILLUSTRATED CYCLONE CATALOGUE ON REQUEST.

CYCLONE Pty., Ltd., EXCHANGE BUILDINGS PIRIE ST., ADELAIDE.

Also at Swanston Street, Melbourne, and Ash Street, Sydney

opinion accounted for not only half, but after a few years for the whole herd. He highly commended the farmers who had introduced so much pure stock, especially bulls, into that district. It was necessary in their locality to have dual purpose cattle, and he thought that the Milking Shorthorn or Friesian would be most suitable. He concurred with the writer of the paper in respect to the value of ensilage. In the opinion of Mr. J. Boundy, Cape barley was an excellent crop for ensilage, and he considered that the better the materials used the better the product. He thought the time had come to eliminate mongrel bulls, and a law should be made to insist on pure breeds; the tax of 10s. per head was not nearly drastic enough in that direction. The speaker also mentioned the efforts that were being made to introduce good strains of cattle into the district. Although ewes and lambs paid better at the present time, he protested against the destruction of bull calves, because in three years' time prices for beef would possibly be very much improved. Mr. A. L. Vanstone said the paper presented some very clear points, and stressed the most important factors—breeding and feeding. The feeding was of great importance, and in that connection ensilage was a very valuable fodder, especially for the dry months. Even in spring, when hand feeding was hardly necessary, he had found that his cows had responded better when feeding them with a little hay chaff daily to prevent blowing, while during the winter months the judicious feeding of the cows determined to a great extent the success of the cream yield. He also thought more should be done to protect cows against the heat of summer and the cold of winter by providing suitable shelter, etc. He agreed with a previous speaker in regard to the keeping of young bull calves, which only required about four months' attention, and then at the end of three years or so paid for their keep, even if sold at a moderate price.

MAITLAND (Average annual rainfall, 20.08in.).

February 3rd.—Present: 16 members and nine visitors.

Methods of Agriculture Abroad.—Mr. H. G. Tossell, M.P., who had recently returned from a trip to the Old World, delivered an address. In the course of his remarks Mr. Tossell said as a general practice Australian farmers strongly advocated the system of bare fallow, whilst in other countries different methods of tilling the soil were adopted. Farmers in America and the Old World did not grow such clean crops as those grown in Australia, but considering that the land was cropped every year, and often two or three crops were harvested in the one year, the production per acre was far greater. In America and Europe the farmers grew a rotation of crops, including wheat, oats, barley, maize, and vegetables, such as potatoes and turnips. In America tractors and mules were more in evidence than the horse, owing to the low price of motors and the cheapness of fuel. The excellent condition of the roads had enabled motor power to outstrip the horse. The quality of the horse was not of such a high standard in North America as in other countries visited. In New Zealand he had seen a grand class of Clydesdale, and good animals were plentiful. In England the Shire horse was preferred. In Scotland the Clydesdale predominated; some of the finest animals of that type he had ever seen were in Glasgow. In France and Belgium the Percheron horse was generally favored. On account of the size of the holdings in those countries, with the exception of America, large teams were seldom seen; even in America only in isolated cases were big teams used, and, speaking generally, the size of the teams in Australia was much larger than elsewhere. In most instances two or three horses or mules constituted the team. It had been his pleasure to inspect some fine dairies and butter and cheese factories in the United States. The equipment and scale of working were wonderful, everything being done by machinery. Of the cattle, the Holstein played the most prominent part, although in some dairies other breeds were preferred. In England there was a much greater variety of cattle; different counties had breeds to suit their own conditions. Of grass-fed cattle, the Queensland bullock outclassed anything he had seen. Among other questions asked of Mr. Tossell was whether he thought the mule would ever be popular in Australia. Mr. Tossell was of the opinion that pioneering work could be done with that animal.

WESTERN DISTRICT.

COLLIE.

February 4th.—Present: 13 members and visitors.

UNDERGROUND TANKS.—Mr. A. E. Starkey, who contributed a paper dealing with this subject, said one of the main points in securing a good supply in the underground tank was to see that the site selected was a place where there was a good run of water. When the excavation had been completed, a trench 10in. wide should be thrown out. Next 3in. metal, with a mixture of three of sand to one of lime, should be prepared and rammed well into the trench. The walls of the tank should first be brushed down with a stiff broom and left for a few days open to the sun until ready for cementing. The first coat of cement applied to the walls should be mixed to the constituency of five parts of sand to one of cement, and the second coat should be a little stronger—two of sand to one of cement. When that work was completed a cement wash should be prepared and applied to the wall. The writer suggested a 6in. bottom, and

90lbs 45% SUPER EQUALS 112 lbs 36% SUPER

WHY NOT

REDUCE
FREIGHT & CARTAGE
BY USING
WALLAROO MT LYELL
45% SUPER

GUARANTEED
DRY & FREE RUNNING

ORDER NOW

preferred a tank with rounded corners. Provision for a diphole should not be overlooked. In the discussion that followed Mr. Rowen expressed a preference for sloping walls, because they could be made more cheaply and with less labor than the straight walls.

LAKE WANGARY.

February 3rd.—Present: nine members and three visitors.

Question Box.—The meeting took the form of a "Question Box," when several subjects were introduced for discussion. A member reported that his cows were showing signs of depraved appetite, and it was agreed that the cattle should be supplied with a salt lick. In reply to a question regarding the preparation of a lick for sheep, Mr. Hawke furnished the following recipe:—½cwt. salt, 20lbs. lime, 1½lbs. sulphur, 1½lbs. sulphate of iron; these ingredients to be mixed, and added to ¼lb. saltpetre (dissolved in half a bucket of water) and a quarter of a bucket of treacle. It was agreed that Mortgage Lifter was the best variety of oats for that district, and that the presence of tick in the fleece would affect the price obtained for the wool. Mr. W. A. Shepperd tabled a sheaf of Sudan grass 4ft. 6in. high, the result of 12 weeks' growth. The crop had received no artificial waterings. Mr. Hawke read an extract, "Subterranean Clover."

MOUNT HOPE.

February 3rd.—Present: 10 members.

How to Keep the Boy on the Farm.—The following paper was contributed by Mr. G. A. Vigar:—"This is a pressing question at the present time because of the drift of the population towards the city. It is not only a question of maintaining the people born in the rural districts, but also to attract the city lad to the farm. It is very important for the farmer to endeavor to create a rural atmosphere. He should think farm, talk farm, impress it upon his boys that the farm is the best life in the world; that it is the most independent life a man can have; that his time is his own; that he can come and go as he likes; that so soon as a boy hires himself to another his time is not his own. Endeavor to keep the boy fully employed at home. Keep a good table. Do not let the boy think that a neighboring farmer keeps a better table than he has at home. See that the boy is well dressed, and do not let him feel that his neighbors are looking at him because of his poor clothes. A contented boy at home is worth more than good food and clothing. When occasion demands see that he has a reasonable amount of pocket money. Give the boy as good an education as you can, and if possible let him have a year or two at the high school after he has gone through the primary school. Take the boy into your confidence in matters of farm management. From time to time let him have his own way in matters that are not essential. Consult him on the order of the day as to what is to be done and how it is to be done. Work with him and explain the reason why things are done as you go along. Give the boy an insight into the financial affairs. Let him know what your income is and how it is spent. Let him feel that he is a partner and not a worker only, and when the time arrives that the boy wants to start a home of his own, let him feel that you will strain your resources to the utmost to give him a good start in life. Encourage the boy if he has a hobby of some sort. If it is reading, let him join a library. If it is sport, let him join a football or cricket club, or if it is mechanics, let him work in the blacksmith's shop. There may be some loss of time, but it will help keeping him satisfied with the land. Keep stock of a good quality and get the boy to take an interest in breeds and prices. Work towards having a well-conducted farm. Endeavor to have a place for everything and endeavor to keep everything in its place, but, above all things, if you wish to keep your family together and keep your boy on the land there must be discipline in the home. Father must support mother, and mother father in the rule of the home. After having done all that is possible, there will be some boys that will not be satisfied with the land. They will, of course, go into other occupations, but I think with a little care on the part of the farmer a great portion of the drift away from the farm can be stopped." In the discussion that followed, Mr. Thos. Speed said he thought if the farmer gave the boy plenty of work and a fair amount of sport it would keep him on the land. Mr. J. Doudle stated it was important that the boy should have plenty of sport and not be debarred from going out when he wished.

DARKE'S PEAK, February 7th.—The first meeting of the above Branch was held in the local hall. Officers were elected and a programme of meetings arranged for the ensuing year.

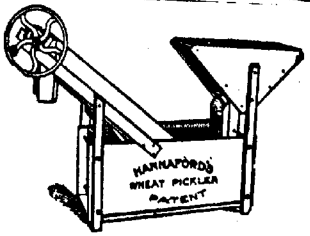
ROBERTS and VERRAN, February 1st.—The meeting took the form of a "Question Box." Mr. B. Evans inquired as to the best method of destroying rabbits. Mr. M. Masters favored the use of a fumigator. Mr. C. Simmons advised poisoning with a mixture of arsenic and carbon-bisulphide applied to thistles. Several other subjects of timely interest were also brought forward for discussion.

TALIA, February 10th.—Several subjects of local interest were brought before the meeting, and a keen discussion followed.

DURABESTOS
WILL MAKE A
DURABLE HOME

DURABESTOS is the most permanent and perfect home building sheet. It is made of Asbestos-Cement, a material like marble for durability. As easy and economical to erect as wood lining.

SAMPLE AND BOOKLET POST FREE FROM
WUNDERLICH,
LIMITED,
THE CEILING PEOPLE,
113, CURRIE ST., ADELAIDE



"STOP WORK!"

Pickling wheat is made easy and thorough when you use an up-to-date appliance like

THE
HANNAFORD WHEAT PICKLER

and it turns the irksome job into one of pleasure.

The machine treats the seed—removing smut, weed seed, rubbish, &c., and pickles every grain evenly and perfectly, and BAGS THE GRAIN.

TREATS 14 BAGS PER HOUR.

One or two persons can work it.

Do not waste time. Order now.

GUARANTEED SATISFACTION

Apply—

ALF. HANNAFORD & Co.
Prospect, South Australia.

EASTERN DISTRICT.

(EAST OF MOUNT LOFTY RANGES.)

GLOSSOP.

November 1st.

Care of the Horse on an Irrigation Block.—The following paper was read by the President (Mr. G. C. Jackson):—"For the ordinary block horse I would suggest the following routine:—5.30 a.m., water and feed; 7 a.m., groom; 7.30 a.m., harness up and water. Permit the animal to drink as much as it wants. Do not chase it away from the trough when it raises its head; it only wants to breathe. Inspect harness during the harnessing operations and note any defects, especially any that are likely to inconvenience the animal. Eight o'clock, work; 10 o'clock, smoke-oh for a quarter of an hour; 12 o'clock, dinner, a drink preceding the feed; 1.30 o'clock, work till 5 o'clock, with a quarter of an hour's smoke-oh about 3 p.m.; 6 o'clock, water and feed, with a manger of hay about 8 o'clock. If possible use bedding, but the habit of permitting the dung accumulation to act as the bed is wrong from any point of view, and is only the custom of the lazy. The largest proportion of a horse's ills is due to defective feeding and defective harness. The following rules for feeding will, I think, be accepted as correct:—Water before feeding and not for at least an hour after. Feed in small quantities and often. Do not work an animal hard immediately after a full feed. Never give to a horse large quantities of food to which it is not accustomed. If these rules are followed, and care is taken to ensure that only sound, good food is fed, very little trouble will be experienced. Horses require anything from 5 to 15 gallons of water per day, the quantity depending on the temperature and the amount of work performed. The water should be as pure as possible, clear in appearance and free from taste or smell. Pure water is just as essential to a horse as to a man, and it is a mistake to suppose that a horse can drink badly-contaminated water with impunity. Water obtained from shallow wells, contaminated with surface drainage or containing decomposing organic matter, frequently causes diarrhoea, and generally predisposes to colic. Water that contains a large amount of sediment should not be given, as the sediment causes a mechanical irritation of the mucous membrane of the stomach and intestines, known often as sand colic. When the horse is at rest in the stable, water should be given three times a day, and should invariably precede the feed. This latter point is of considerable importance. The stomach is small in proportion to the horse's size, and water does not remain in it, but passes through the stomach and small bowel to the water gut. If water is given after feeding, besides weakening the digestive juices, a large portion of the food in the stomach and small intestines will be washed out in an undigested state, and indigestion and colic may result. After a long journey a good plan is to water a mile or so from home and take the horse in slowly. This prevents colic and chills, due to the ingestion of large quantities of water when the animal is in an exhausted state. An animal after prolonged exertion has its system depleted of fluid. It will not eat much until its thirst has been satisfied, therefore the water should come first, and while the animal is still warm is the best time to give it. After the horse has been standing, the body temperature falls, and to give cold water freely then is only to intensify the effect of the cold water on the system. A consideration of the anatomy of the horse's stomach will greatly assist in understanding the digestive derangements which cause colic. The stomach is a baglike organ with two openings—one from the gullet and the other to the bowel. It is provided with powerful muscular coats for the purpose of churning the food, and it manufactures a digestive fluid known as gastric juice in very large quantities. The capacity of the organ is up to 4galls., and digestion is most rapid when about two-thirds full. It has been found that an immoderately large feed will hinder digestion for hours beyond the normal period. It is obvious that the small stomach of the horse necessitates constant refilling in order to dispose of the rather large amount of food required by the animal. Food is not intended to stay long in the stomach or first portion of the intestines, and in the three or four days which elapse between eating and evacuation, all but a few hours is spent in the large bowels at the end of the intestinal tract. Food should be digested and passed out quickly, and anything which causes retention of food in the stomach is liable to cause colic. To ensure rapidity of stomach digestion, it is essential that the food should arrive at the stomach in a properly prepared state. It must be thoroughly masticated and well mixed with saliva. For perfect mastication the teeth must be in good order. Frequently in young animals mastication is imperfect on account of faulty shedding of the first teeth. Where these are noticed as caps to the permanent teeth they should be removed with the fingers, or a piece of stick. In older animals the edges of the teeth become so long and sharp that mastication becomes almost impossible. Horses so affected will bolt their food without proper crushing, and this of itself frequently causes colic through fermentation in the stomach. Teeth should frequently be examined and treated when necessary, as faulty teeth are responsible for great loss in condition. Should small balls of partly-chewed food be found in the manger, watch the horse eating. It will probably be found that it makes two or three rapid movements of the jaws and drops the food from its mouth. This is known as 'quidding,' and indicates that the teeth are badly in need of attention. Horses whose teeth are in good order frequently bolt their food, but several large stones in the bottom of the manger will prevent this. A frequent cause of bolting is the practice of feeding boiled feed. This is often absolutely harmful. Boiling does not increase the digestibility of food, but does permit of the bolting without mastication, and consequent sudden overloading of the stomach. Further boiled food is apt quickly to ferment. Linseed is the only food that requires boiling before use. Should a horse's stomach become overloaded, vomiting, without a rupture of that organ, is impossible. To this danger must be added the further one that the pressure of food in an overloaded stomach may cause the opening in the small bowel to become closed also. When this takes place, food is imprisoned in the stomach, and after a short time will ferment, and ultimately, owing to the stretching of the walls, the stomach will become paralysed. Cases of this sort frequently occur, and rupture of the stomach is not uncommon. The practical means of avoiding this and other troubles is to give small feeds at frequent intervals, and to be especially careful with young animals and those in poor condition. In these cases the involuntary muscles of the bowels are in just as soft condition as the external muscular system, and are not capable of dealing with large quantities of food at a time. One of the commonest causes of colic is giving horses food to which they are not accustomed. It has been proved that the character of the food influences the quantity and quality of the gastric juices. A definite and constant diet produces juices capable of dealing with it, but quite incapable of dealing with sudden changes of food. Under proper conditions no food will cause colic, although wheat and barley are more indigestible than most; but many foods will do so if given in excess or at the wrong time, such as giving lucerne to a horse that has been starved. Horses can be made to exist on any food that is digestible, provided they are gradually accustomed to it. Grass-fed horses suddenly put on dry feed, on being taken on a long journey get colic owing to the sudden change of food. To avoid colic give food at regular intervals, and see that the food is of good quality and of proved dietetic value. Mouldy corn, damaged oats, or musty hay often do a great deal of harm. Never give green forage in an immature or fermented condition. Never give large quantities of bran to a working horse. Bran will maintain the contents of the stomach in a soft condition and keep them acting. Do not suddenly alter the amount of food given. It is a common practice to feed horses up for a day or two prior to severe work, and this causes much intestinal trouble, such as 'stomach staggers.' Young horses cannot digest as much corn as old ones. Horses when rested, even for a day or two, should have their food, especially corn, reduced. Watch for symptoms of indigestion, such as an offensive smell in the mouth, and the presence of undigested oats or other matter in the dung. The condition of the skin is a good aid to detecting commencing digestive trouble; for example, the sudden swellings of nettle rash, and the irritation and often eruption shown by horses too highly fed. Such observation will often prevent colic, as the necessary measures can be adopted. See that a horse does not start work on a full stomach, and do not give big feeds of any sort, but more especially bulky food during work. Do not feed too soon after work; wait until the rest has restored the animal's digestive powers to normal. It is extremely difficult to differentiate between the various gastric and intestinal affections of the horse, and most complaints are placed under the one head, 'colic.' The name seems to apply to a train of symptoms which show that the horse has pain in the abdomen, and colic is divided into spasmodic and flatulent. In spasmodic colic the pain is not continuous. There are intervals of ease between the spasms, during which the animal appears quite well, until another occurs. The animal is generally violent, paws, stamps, kicks at its belly, lies or throws itself down, rolls, stretches itself out as if attempting to urinate, and sweats either in patches or all over. The pulse is fast, breathing distressed, and the mucous membrane of the eye is red, but the temperature remains normal. As the attack progresses the pains become more frequent and of longer duration, and the intervals free from pain shorter. The bowels are constipated, and if the animal passes any dung it is only a very small quantity. The treatment consists in walking the animal about, on no account permitting it to lie down or roll. A drench consisting of 1 drachm of peppermint, 2ozs. aromatic spirits of ammonia, 1 pint linseed oil; should be well mixed and shaken and given slowly. Flatulent colic is due to fermentation of the food in the bowels, which become distended by the resultant gases. The belly is inflated and the pain continuous. The animal appears sleepy, uneasy, and fidgety, wandering slowly round, attempting to lie down but afraid to do so. A drench, consisting of 2ozs. oil of turpentine, 2ozs. aromatic spirits of ammonia, 1½ pints linseed oil, usually relieves. Relief is indicated by the free passage of wind and manure. When the animal is being drenched, should it struggle or attempt to cough, lower the head. A portion of the drench may be wasted, but unless this is done, the mixture will be likely to pass down the windpipe and the animal die. Rectal injections of warm soapy water given through a piece of rubber hose 4ft. to 5ft. long is a good treatment. This method is not harsh, and does not result in the quick evacuation which follows the use of the syringe. About 3galls. should be used at a time, and the funnel end of the hose can then be lowered and the injection will drain out slowly. The end of the pipe should be smooth, and should be oiled before being introduced into the bowel. About 3ft. or more of the pipe should be inserted if possible, but it is important that no force be employed to do this. Founder is often caused by digestive trouble; more frequently known as laminitis. This disease is often seen in horses in high condition, and is then the result of overwork. The animal should be put on a light laxative diet for several weeks and given a teaspoonful of saltpetre in its water twice daily. The horse should be made to stand in cool water up to the fetlocks during two or three hours daily. At the best an animal with laminitis will never be fit for more than light work. Intestinal worms are very common in horses along the river. Their effects are often harmful if not noticed in time, and frequently persistent treatment is necessary to eradicate them. The horse becomes hidebound, and in poor condition, and often worms, varying in length from 2in. to 15in., are noticed in the droppings. These should be buried or burned, and the droppings either used on the garden some distance from the stable or similarly treated. The affected animal should be drenched with a mixture (given in the morning and on an empty stomach) of two tablespoonsful of turpentine in 1½ pints of raw linseed oil. Forty-eight hours later it should be given two tablespoonsful of Fowler's solution of arsenic in its morning feed. This should be continued for a fortnight, when a like period should elapse before the second dosage may be given. The horse should at the end of the six weeks be in good health. During such treatment it may with advantage be placed on special rations, 3lbs. of crushed oats daily being helpful. Should the horse become infested with blood worms, the animal will lose condition quickly, and although much may be done to help it, it is probable that the infestation will never be removed. Fowler's solution, two tablespoonsful per day for a fortnight, followed by a like period with no medicine, is very helpful, while santonine, to those who can afford it, is much the better. Washing is not a natural way of cleaning a horse, and has many disadvantages, such as risk of chill, sweating belly, and mud fever. The heavily-feathered legs of the draught horse should be brushed out daily, but not washed. Washing brings on grease and other troubles. Should the legs for any reason need washing, they should be rubbed dry with a branbag, followed by rubbing in bran until it falls out of the hair dry. Greasy heel is usually, on the Murray, the result of a lazy master and a dirty stable. Continual standing in damp dung and undrained urine quickly fetches on greasy heel, which, while it may be cured if taken in time, often becomes chronic, breaking out at inopportune times and lowering the usefulness of the animal. Stockholm tar is often used, and in cases where the trouble is very mild, it keeps out the dust and is antiseptic. Nature does the rest. In bad cases of greasy heel the hair should be clipped round the affected part, thoroughly cleansed, and pus cleared away. An application of a lotion, consisting of 1 part formalin, 5 parts glycerine, and 10 parts methylated spirits, applied with a paint brush, often cures. The heel should not be washed with warm water and soap. Sometimes a dry dressing of equal parts of zinc, boracic acid, and powdered starch gives good results. Block horses are frequently affected with sand. They lose condition and go off their feed, and are unable to do a good day's work. Sand in horses is dangerous, as the continual sluicing of a mixture of sand and water in the gut wears through the lining, then death quickly ensues. The weight of sand causes it to be at the bottom of the colon, hence but a small portion is evacuated. Castor oil is the only oil which is useful. Oils generally tend merely to glaze the surface of the sand, and form it into a hard mass. The sand which has formed must be broken up, and this is best caused by gas. The most successful treatment consists in dissolving 1lb. of honey in a quart of new milk and putting in the feed. It should not be given as a drench. The effect will be noticed in the droppings almost immediately and in the improved condition of the animal later. An old groom's proverb says 'No foot, no horse!' and we must remember that to each hoof there is a hoof head, a wall, a sole, a frog, and heels, all of which wear and wear out. At least once a week each hoof should be inspected. When shoeing is required the farrier should be visited and a plain flat shoe that covers the wall and a little of the sole should be nailed on to the prepared surface of the hoof by about seven nails. The shoe should be made to follow the ground surface of the hoof and not the hoof made to fit the shoe. Shoeing a horse is a tradesman's job. There is a vast difference between tacking on a slipper and properly fitting a shoe. Even if not worn out, the shoes should be removed every six weeks. Every blocker should have a kit of farrier's tools and be able to remove a broken shoe or tack on a temporary slipper. In conclusion, I wish to acknowledge reference to the works of Captain Hayes and Messrs. Goubaix and Barrier.''

CHARLES WHITING,
GRAIN AND PRODUCE MERCHANT,
NO. 2, CENTRAL MISSION BUILDINGS, FRANKLIN STREET, ADELAIDE.
CASH BUYER OF
WHEAT, OATS, BARLEY, PEAS, CHAFF, &c.

Special attention devoted to Sale and Purchase of Best types of Wheat, Oats, Barley, Lucerne, Rape, Sudan Grass, and other Cereals.

LAMEROO (Average annual rainfall, 16.55in.).

November 11th.—Present: 17 members.

How One can Work a Farm to the Best Advantage.—In the course of a short paper dealing with this subject, Mr. F. W. Eime said he proposed to deal with a farm containing an area of 500 acres. Since the bulk of the land in that district had been under cultivation for about 16 years, trouble with takeall should be decreasing, and he advocated growing more wheat, or sowing wheat every other year. He suggested dividing the holding into small paddocks in order that a crop of oats could be occasionally grown. Two hundred acres of land should be set aside for fallow and the same area for wheat; the balance could be cropped with oats, 50 acres of which would be cut for hay. If the farmer were married, Mr. F. W. Eime suggested that four good milch cows should be kept, and about 150 laying fowls, because such side lines would very materially assist in reducing the account at the store. Ten horses should be sufficient to work the holding; nine for draught work and one that could be worked in a light vehicle. He would only keep sheep when they could be used to destroy the rubbish on the fallow. Super should be applied at the rate of not less than 100lbs. to the acre, but heavier dressings should be made if the farmer was in a position to do so.

NETHERTON.

February 2nd.—Present: 10 members.

The Agricultural Bureau.—The following paper was read by one of the members:—"The benefits of the Bureau meeting are many, and in a district such as ours, where the population is small, and there is much to be found out to make farming a profitable undertaking, every settler should be a member of the Bureau. Each member should enter into the discussion of the paper read to the meeting, and express his opinion for or against the question. The Bureau should appeal more especially to the younger members of the district. They should be encouraged to become members so soon as they leave school, and take an interest in the meeting, where they would meet and learn of the experiences of older farmers. It is a privilege to be a member of the Bureau, therefore all members should be punctual and regular in attendance and take a lively interest in the working of the Bureau. Some of the benefits derived from being connected with the organisation are:—Each member receives a copy of the *Journal of Agriculture* every month, wherein one is able to obtain information relating to every phase of work on the farm; members are also brought into touch with the expert officers of the Department. These officers visit the Branches and deliver addresses and answer questions. I think a Homestead Meeting occasionally and a Farmers' Drive awaken fresh interest in the work of the Bureau."

PARILLA (Average annual rainfall, 16in. to 17in.).

Present: 16 members.

Can the Farmer Increase Production on His Farm?—The following paper was read by Mr. G. E. Gregory:—"Practically the whole of this district is devoted solely to growing wheat, but sheep, pigs, cattle, and poultry can all be kept on the farm as side lines. Sheep can be profitably bred on much of the land, while it is lying idle. The land also benefits in no small degree when sheep are grazing on it, for the droppings assist to build up the soil, and the sheep assist in keeping the fallow land clean. There is, moreover, the advantage that the farmer has a supply of fresh meat, and the lambs are also a good source of revenue. Wool at present prices also adds an item to the benefits derived from keeping sheep. In regard to cattle, if the farmer keeps the right breed, they are always profitable. Some farmers do not give enough attention to this matter. I do not favor keeping too many pigs; just enough for home use. The farmer should keep a flock of good laying poultry and table birds. Draught horses I

SAVE
TIME
WORRY
AND MONEY.

YOUR

INCOME TAX

difficulties are all done away with by placing your matters in our hands. We compile both State and Federal Returns, and supply you with a service for the small sum of from 10s. 6d. per annum. You owe yourself a duty by having your returns prepared correctly, and as taxation grows more complicated each year, it is imperative that you place your affairs in competent hands immediately.

All matters coming into our office are STRICTLY CONFIDENTIAL!

We CHECK ALL ASSESSMENTS.

WRITE OR CONSULT US IMMEDIATELY, ADVICE IS FREE.

THE INCOME TAX COMPILER

COMPANY, LIMITED,

UNIVERSAL BUILDINGS, GRENFELL ST., ADELAIDE,

Public Accountants and Auditors, Taxation Attorneys, Financial and Real Estate Agents.

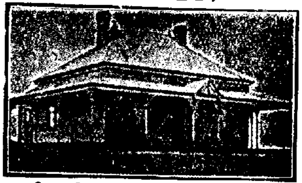
DIRECTORS:
G. E. THOMPSON, Manager.
I. GOLOSKY, A.C.U.A., A.A.I.S. (Late of State Taxation Dept).
A. SAIDE, A.F.I.A., Secretary (Late of Federal Taxation Dept).

do not class as a side line, because one cannot work the farm without them; but at the same time I am strongly in favor of breeding the very best, as they will pay handsomely, and there is always a market for good horses. I prefer the Clydesdale, because it is very active, and not too large for general use.''

POMPOOTA.

February 14th.—Present: 19 members.

MACHINERY FOR THE DAIRY FARM.—The following paper was read by Mr. A. Burrett:—''The first thing to consider in equipping the dairy farm is the lay-out of the plant. Look ahead, and try to lay out the building so that subsequent additions can be made as handy as possible. I suggest that the engine should be placed in a small house outside the main building, with the belt running through the centre of the shed on to a main shaft. The length of the shaft will depend on the number of different machines to be driven. At the same time a short shaft can be installed at the start, and another length added if it is required. I would even up the machines on either side of the belt as much as possible, say, the milking machine, separator, churn, and butter worker on one side, chaffcutter, graincrusher, rootslicer, and sawbench on the other side. The chaffcutter should have the outlet quite handy, to enable one to cart the chaff or green feed straight away to the cows. A bin for the crushed grain and for the roots should be placed in a handy position for mixing the roots with the chaff. The sawbench can be outside the shed, the drive being either direct from the engine or from the main shaft. Before laying out the sheds, etc., the blocker should decide whether he will install a pump driven from the engine or a windmill. If a pump, it will be necessary to consider the height from the water to the foundation of the building. A pump loses its efficiency if the lift is more than 25ft.—in fact, a pump will not hold the water at 30ft., and unless the joints of the suction pipe are very tight, it will not raise the water. I suggest 15ft. to 16ft. for the length of suction, so that if a pump is to be used, the foundation of the building should not be more than 20ft. above the water. If a windmill is used, it can be placed in any suitable position. If a pump is decided upon, I advise having a force pump, especially if the house and tank are some distance away. The water can be driven some distance with a force pump, whereas that cannot be done with a centrifugal pump with the same engine power. The force pump has a barrel with a plunger working backwards and forwards in it, on which are two leather buckets, which open out to fit the barrel, and so force the water along the barrel. On the side of the barrel are two sets of valves, a suction and delivery valve. The suction valve lifts on the suction stroke, and water is sucked in; on the delivery stroke the suction valve closes automatically and becomes a retaining valve, and the delivery valve is opened and the water forced out; then it automatically closes with the weight of water and becomes a retaining valve. This action takes place with each stroke of the pump. The suction pipe should be screwed very tightly, because if air is allowed to enter, a partial vacuum is formed, which will probably result in the loss of water. On the bottom of the suction pipe there should be a foot valve, so that the pump can be primed. This is a valve which works like a hinge, and lifts and closes with the action of the pump. When the pump stops it closes, and should hold the water. Some times it does not, and the buckets not being too well fitting in the pump, it will not draw; then it is necessary to fill up the suction pipe with water. This is called priming. If the pump fails, and will not pump water, prime it first; and if it still will not pump, take the valve caps off, when a piece of dirt or a small stick will probably be found under one of them. These valves should be ground-in if they do not show an even wearing surface all around. A strainer should be placed on the bottom of the suction pipe to keep bits of stick and weeds, &c., away. Now we will take the milking machine.'' The speaker gave a description of the working of the machine, and then stated:—''The milking machine is a time saver, but the dairyman must be exceedingly careful to clean out the pipes after use. The chief points about a separator are to run it at the right speed, to regulate the screw so as to get every drop of cream out of the milk, to keep it clean, and to watch the bearings for an excess of play. Do not curtail expenses on a few bearings, when by renewing them better results will be received from the machine. The chaffcutter should be about a No. 4 for the dairy farm. I believe in chaffing all fodders. When erecting the chaffcutter put the legs into the ground and bed them in concrete, so that they remain firmly in position. Put it down in line with the shafting. Do this with all the machines. To get the square, drop a line with a plumbob from the shafting, and make a mark on the floor. Go to the other end of the shafting and do the same thing; join the two marks, and the line of the shafting will have been transferred on to the floor. Then square off from this line. When this is fixed, and the chaffcutter placed in position, fix up the feed box and table for the hay. Sharpen the knives and oil where necessary, using a good solid lubricating oil. Let the knives up, so that they just nicely brush the mouthpiece from start to finish. See that every nut on the machine is tight, and that the grease cup on the loose pulley is filled and given a turn. If the hay is running to the left hand end of the mouthpiece, it can be taken that there is too much weight on the lever underneath. More weight is needed for sheaves than for loose hay. More weight is also required for loose oaten hay than for lucerne. It will be found that for sheaves the knives will have to be sharpened for every ton that is cut. For lucerne they only need to be sharpened for every four tons. Each time that the knives are sharpened run over the set screws and set the knives. A touch makes quite a lot of difference to the sample of the chaff. Of course, the sample depends a good deal on the feeder keeping a full mouthpiece. Keep the safety roller revolving, which means an even sample of chaff. The knives when new will have a fairly long bevel. It is a very tiring job sharpening knives, and one is apt to make a shorter bevel each time. I do not favor the ½in. bevel—the edge seems to turn up too quickly. I prefer a ⅜in. bevel. If the chaffcutter has an elevator, either for bagging or for passing it straight into the feed bin, a little extra expense in having a light chain elevator belt instead of a leather one will be well repaid. A chain elevator does not take so much driving as a leather one, because the leather one has to be fastened so tightly. A little point that requires attention is to see that the clutches are adjusted. As the clutch wears, it is necessary to follow up the adjustment. This is a long nut, with a lock nut at each end, which has a right and left handed thread. This lengthens one way and shortens as you turn the nut the other way. If this is not set properly it is impossible to engage the clutch, and also to disengage it, which would mean something very serious if the operator had his hand caught in the machine. It is a mistake to drive a cutter too quickly. Fast driving only knocks your machine about and dulls the knives quickly, and by the time one or two breakages have been repaired, no more chaff will have been cut, and it will have been more expensive. I suggest about 290 revolutions a minute. The oat crusher is on a stand, with a pair of rollers worked by cogwheels, with a hopper on top in which to place the whole oats. There is an adjustment for the feeding, which allows the oats to fall in between the rollers. The rollers are screwed up to each other to get the pressure. The rollers are rough, with light grooves on the slant, which help to draw the oats in, and crush them far better than the plain rollers. The root slicer is a very handy machine for cutting up mangolds, turnips, swedes, &c. This has a hopper, into which the whole roots are thrown. The hopper is vertical on one side, and slanting on the other, to ensure the roots gradually sliding down to the knife, which is a circular disc punched out like a nutmeg grater. The disc is driven around, and as the roots slide down to it, it tears flakes off them and passes them to the floor, or on to the elevator. It is possible that some blockers may go in for a silo. In that case an elevator will be needed to raise the chaffed green feed to the top of the silo; so in the lay out of the plant it will be as well to consider having the silo quite handy to the outlet of the chaffcutter, even if it is necessary to have a small intermediate elevator or carrier to the silo elevator. Again, I would point out that chain elevators are far better than those made of leather. With all these machines, I would like to stress the point that oil is cheaper than machinery, and do not forget the spanner. If a windmill is to be erected, fix it very firmly in the ground. If it is a large one, say, 8ft., get two sleepers, if possible, and bolt them to the feet and bed them in concrete. If it is a smaller mill, say, 5ft. or 6ft., concrete each leg in, say, a 2ft. square hole, 2ft. deep. To erect the mills, it pays to fit them up on the ground, wheel and tail included, and then place the two legs to enter the first two holes, and pull it up with a rope. The best way to use the ropes is to have two on the side from which the mill is pulled, the men standing about 20yds. apart, and one rope opposite with which to hold it steady. If a large mill is used, I would put the head on and pull up as before, and put the wheel and tail on afterwards. To do this it will be necessary to lash on a spar leaning outwards and upwards, and use a small block and tackle. Get the usual force pump—not the bore pump—that is the pump that has the delivery pipe running off the side of it; it is much handier for getting at, and I do not think a bore will be needed. The force pump will put the water as far as desired, whereas the bore pump will only lift into a tank half as high as the mill. The pump has a leather bucket on a rod running up and down the barrel, but in the centre of the bucket there is a brass butterfly valve. This is a round valve with three guides. At the bottom of the barrel there is a leather clack valve, working like a hinge, and as the plunger is pulled up this clack lifts and water is taken in. On the downward stroke the clack closes, and the butterfly valve lifts and allows the water to get through to the top of the plunger. On the upward stroke again the water is sucked into the barrel, and the water on top of the barrel is forced higher up the pipe. There are a few bearings which must be watched for slackness, especially those which allow the engaging cogs to mesh. If they are slack, they gradually get farther out of mesh, and eventually miss, and perhaps smash the teeth. A small 5ft. mill, away from trees, will catch any breath of wind there is, and unless a large quantity of water is required, it is just the mill for stock, &c. The clipper is one of the most important pieces of machinery, and it is often the most neglected and badly treated. The only way to keep a clipper in good order, and to get the best results from it, is to go down to the paddock with the spanner and oil can. Do not put the horses into it until every nut on the machine and every oil hole has been attended to. Do not try and cut around the corners, but cut straight through; then lift the knife and turn the horses. If the machine becomes blocked, back the horses, clean it out, and start again. Do not try to drag it off, or that will strain the knife gear, and once that is strained trouble can always be expected. Always keep the machine 'washered up' on the wheels, and the dogs will not wear out so quickly. Use the spanners and oil can, and it should last for a good many years with very little cost of repair. The rake is another implement that requires a constant use of the spanner, the oil can, and 'washering up.' I recommend the erection of a 4-h.p. petrol engine, similar to those installed at the pumping station, because the average blocker will not need to work it for lengthy periods. For a long run I should prefer an oil engine. The former type of engine is economical and solid, has lasting wear, and the parts are accessible, which is a great thing, especially when one is in a hurry. See that the engine is put down on a solid foundation 9in. to 1ft. wider than the base of the engine. Also see that provision is made for bolt holes. The concrete foundation should be about 2ft. 3in. to 2ft. 6in. deep. Mix the concrete in the proportion of 4-2 and 1. If a man is engaged to erect the engine, make him stand a penny up on edge on the engine. If it will do this, the foundation will be satisfactory. Be sure and have the engine in line with the main shaft. This can be done the same way as mentioned for the other machines. Make the engineer explain several times how to stop and start the engine, and where it should be oiled. In the first place, an engine has four complete strokes, and is generally called a four-cycle engine. The first stroke is when the piston comes out and sucks in a charge of gas; the second when it goes back and compresses it; the third when the fired gasses kick the piston out again; the fourth when it returns and blows the burnt gasses out into the atmosphere, generally called the exhaust. These four strokes are continuous so long as the engine is going. With the first stroke the engine is pulled over by hand, and in doing so the mixture or inlet valve and air valves are opened mechanically by cams fixed on to the side or cam shaft, which is driven by screw gear from the crank shaft. This cam shaft only goes round once to every second turn of the cranks. It is necessary for it to do this, otherwise two continuous suction strokes would be made. By drawing the piston out with the inlet and air valves open, certain quantities of petrol and air have been sucked into the cylinder. The position of the cams at the end of the stroke will indicate that they are not touching these valves, and in consequence the valves are shut, and provided they are nicely ground in, this leaves the cylinder absolutely airtight. As the turning over of the engine is continued, the second stroke is started, and the operator finds that it becomes harder and harder to get back. This is due to the compressing of the petrol and air, called the mixture, into a smaller and smaller space. Gasses under increased pressure show a corresponding rise in temperature, and as the mixture is raised in temperature, so it is atomised or vaporised, and becomes such a temperature that a small spark will explode the mixture. The position of the same cams on this stroke are one-quarter farther around, but still engaging nothing. There is another cam that engages with the magneto just here, if it is a trip magneto; and just as the piston is at the end of its compression stroke, the magneto fires, explodes the mixture, and forces out the piston to the far end. That is the firing stroke, and all cams are disengaged except the exhaust cam, which starts to engage when the firing stroke is nine-tenths finished. As it engages, it lifts the exhaust valve and allows the piston to force out the burnt gasses, which travel along a pipe to a silencer, and from that to the atmosphere. Then as the engine swings round, the exhause cam disengages about three-quarter stroke, and the cams come into operation again on the suction stroke, and so it keeps on, suck, compress, fire, exhaust. The side shaft may possibly come separate from the engine, in which case it will be necessary to put it on with the right cogs in mesh. There are usually two marks, one on the tooth of cam shaft cog and one on the space of the crank cog. If there are no marks, set the engine so that the piston is nine-tenths back into the cylinder. Then set the side shaft cogs so that the exhaust cam is just engaging the exhaust lever. This is called timing the engine. Sometimes, if the engine works very hot and thuds, it might be beneficial to shift it a tooth; but I think I would leave that to an engineer. If the engine stops, what is the first thing to do? Go to the carburettor and see that it is flooding correctly. There is generally a float chamber, which fills up when the taps are turned on, and when the petrol is a certain height. By means of two small levers it forces a small needle valve into a seat and shuts off the supply. As the engine takes the petrol the float lowers and releases this valve, and so the supply is regulated. There is a jet in the next chamber with a very small hole in it, and it is from this jet that the engine sucks the petrol. Sometimes this becomes blocked with dirt, and obstructs the flow of petrol. Next see if a spark is occurring. If this is not so, it will possibly be because there is too much oil in the magneto, and the current is shorting. If the magneto is at fault it can be tested by holding the wire close



COWELL BROS. & COY.,
LIMITED.

Timber Merchants.

Wood and Iron Houses a Specialty.

ADELAIDE:
Victoria Square.
PORT ADELAIDE:
New Dock.

One of our Wood and Iron Houses
(from a photo.)

Fence Droppers, Sheep Gratings, Wool Tables, Beehives, &c.

Wholesale Ironmongers.

Estimates and Price Lists on Application.

HEAD OFFICE:
PARADE,
NORWOOD.

to the engine, and then tripping the magneto, when a spark should jump across: if this does not happen, the trouble will be in the plug. If a trip magneto is employed, it will be necessary to have a make and break plug. This is an iron casting, with a fixed pole through it and another hammer-like rod. When the magneto trips it lifts this hammer and a spark jumps across the space; if it does not, and the magneto is all right, a shorting is probably taking place on the fixed pole, which is insulated with mica washers. The trouble will probably be oil. Give the part a good wiping, and if no spark is obtained, clean the points where the spark should be with emery cloth. If it is not a trip magneto, but a continuous running one, try the magneto with the wire, and then if there is no spark, obtain a new sparking plug. If the engine still refuses to work, it must be that there is not enough compression. The valves may be stuck on the spindles, but more than likely it will be the exhaust valve which needs 'grinding in.' To do this, take off the spring, and the air valve which is generally above it, and take the exhaust valve right out. Mix up a little emery powder or knife polish with some oil and smear it round the valve seat. Put it back in place, and with the screwdriver turn it backwards and forwards. Give it a lift occasionally; then take it out and look at it. If it is nice and bright, and no holes in it, it will be pretty right. Then look at the seat in the engine, and if that is good, the parts can be coupled up again and the engine star'ed. Keep the engine well oiled, and oil everywhere every time the engine is started, and if a run longer than four hours is made, oil all around again. Fill the lubricators with the oil supplied, one kind for cylinder and another for the big end or crank bearing. Set the cylinder lubricator to drop one drop in about seven cycles, and the big end one drop in five cycles. Do not oil the magneto too freely, say, one drop every day. Go around all the main shaft bearings at least once a day, if they have oil or grease cups. Fill them up as they are emptied, and otherwise keep everything clean. Do not forget that oil is cheaper than machinery, and that the use of a spanner saves the bill for repairs.'' Mr. Burrett answered a number of questions.

RENMARK (Average annual rainfall, 10.93in.).

February 1st.—Present: 20 members and two visitors.

Pears.—Mr. C. A. Ritchie, in reading a paper on this subject, first stated that much of the information contained in his paper had been taken from the experiences of Mr. A. Seekamp, who was recognised as a grower well versed in the culture and drying of pears. The paper then read as follows:—''The pear is the most long-suffering of all fruit-trees, and will grow and bear fruit. after a fashion, in soils that would be sudden death to other trees and vines. The pear will resist drought, and grow in wet soils better than any other orchard tree. The failure of the crop this year is unusual, and I have noticed that the bulk of the fruit is showing on the south side of the tree, which indicates that the hot north winds had a good deal to do with the non-setting of the fruit. I should also like to mention that it seems as if pears on light soil have done better than those on the heavy land, probably because they set earlier in the season. *Pruning.*—As usual, ideas of pruning vary very much, but there can be no doubt that there is room for a vast improvement where one notices limbs propped up with stakes to support the whipstick leaders, the result of not cutting back sufficiently hard. A heavy fruiting tree will not make much growth, and to encourage this the number of fruit spurs should be reduced. I heard some people laugh at one pear-grower who cut out a lot of the fruit spurs, but the crop of fine big fruit that was received the following year showed that he knew his work. Two pear blocks pruned by experienced men last season have come under my notice, and the difference is so marked that I think it worth mentioning. One man pruned to a fruit spur. and the result is a forest of woody growth on the top of each leader, while the other pruned back to a wood shoot, which continued its growth without sending out a 'young forest' that will require cutting out again this year. I held my tongue when the grower with the plethora of growth on the tops of his trees remarked on the good work of the experienced man who had done the job for him. *Spraying.*—My practice is to spray before the blossoms open, and again when most of

AGRICULTURAL PUBLICATIONS.

The following bulletins and leaflets may be obtained by residents of South Australia by sending a 1½d. stamp for postage of each copy required: other places, 3d. each:—

All communications must be addressed—Editor, "Journal of Agriculture," Victoria Square, Adelaide.

Subject.	Bulletin No.
ANDREW, H. W., Botanical Assistant—	
Seeds Imported from Abroad into S.A.	109
BEAUMONT, CHAS. H.—	
Orchards and Orchard Work	148
BULL, L. B., D.V.Sc.—	
Forage Poisoning	167
COLEBATCH, W. J., B.Sc. (Agric.), M.R.C.V.S.—	
Barrenness in Livestock	XLVIII.
Conversion of Fodder Crops into Silage	LXVII.
Dietetic Value of Cereals and their Products	155
Field Pease, Production and Utilisation of	140
Pigs, General Management and Breeding of	141
Roseworthy Agricultural College—Harvest Report—	
1914-15	90
1916-17	114
1918-19	123
1919-20	136
HODGE, C. P.—	
Hints for Settlers Starting in Mallee Lands	—
LOXTON, C. A., B.V.Sc., Government Veterinary Surgeon—	
Diagnosis of Disease in Farm Animals	133
PERKINS, Prof. ARTHUR J., Director of Agriculture—	
Agricultural Education in South Australia	154
Ayers and Hanson, Possible Improvements in Farming Practices of Hundreds of	95
Black Japanese Millet on Reclaimed Murray Swamps	XLII.
Dairy Cattle, Suggested Rations for	XXI.
Ensilage, Use and Making	146
Farm Horses, Suggested Rations for	XXII.
Farm Livestock, How to Lay Foundations of Good Strains	XXXI.
Forage Crops in the South-East	92
Livestock, Duties of Farmers as Rearers of for the State	116
Livestock Foodstuffs and Feeding Rations, Equivalence of	102
Manures in their Relation to Present day S.A. Farming	148
Manuring of South-Eastern Pasture Lands	122
National Aspects of Guaranteed Minimum Price for Wheat	121
Phosphatic Manures	87
Pigs, Feeding Tests with	163
Pigs, A Neglected Source of National Wealth	164
Possibilities of Increased Production in our Rural Industries	126
Rise and Progress of the Fruitgrowing Areas of the Murray	168
Roseworthy Agricultural College—	
Harvest Report, 1910	63
Harvest Report, 1912-13	78
Harvest Report, 1913-14	83
Fourth Report, Permanent Experimental Field, 1909-10	65
Fifth Report, Permanent Experimental Field, 1905-14	89
Rotation of Crops, 1916	100
Rotation of Crops, 1919	125
Training and Research	115

Subject.	Bulletin No.
PLACE, F. E., B.V.Sc., M.R.C.V.S., M.R.A.S.E.—	
Bloodworms	LXV.
Bot Flies and Bots	LXVI.
Cow, Some Common Troubles of the	139
Diet Deficiency and Disease in Live Stock	77
General Management of Draught Horses on the Average Farm, Notes on	132
Horse, The, General Management, etc.	133
Medicine Shelf, The	85
Milk Fever or Drop after Calving	XXXIII.
Some Sheep Worms	LIV.
QUINN, GEO., Horticultural Instructor, &c.—	
Apple Packing	98
Codlin Moth, The	XIV.
Cotton Trials at Berri	160
Fruit Trees and Vines, Remedies for Diseases of	70
Olive Growing, Notes on	145
Orange in South Australia	107
Select List of Fruit Trees, &c.	93
Table Grapes	LIII.
SPAFFORD, W. J., Superintendent Experimental Work—	
Ensilage, its Manufacture and Use	128
Experimental Farm Harvest Reports—	
1916-17	119
1917-18	124
1918-19	129
1919-20	153
1920-21	157
1921-22	165
Fertilizers for the Home Garden	160
Fodder Crops on Reclaimed Swamp Lands	127
Pig Raising where Lucerne can be Successfully Grown in S.A.	149
Soils and their Management	169
Wheat Crops—Some Diseases of, and their Treatment	110
Wheats, Cross Fertilization of	XLIII.
GENERAL AND REPRINTS—	
Beekeeping Notes—Foul Brood: Its Symptoms and Treatment	XIII.
Berri Experimental Orchard, Second Report	147
Dry Farming Conference, 1911 Report	I.
Fruit Nomenclature	XLIX.
Congress, Agricultural Bureau, 1911	66
Congress, Agricultural Bureau, 1914	86
Herd Testing Societies, Regulations	137
Hints to New Settlers on Irrigation Areas	99
Milking of Cows	VI.
Ostrich, The	XXX.
Plums and Prunes	XV.
River Murray Herd Testing Association, Second Report	170
Sheep Tick and Sheep Louse	84
Spaying of Cows	IV.
Tobacco, Growing and Curing	159
CONFERENCE REPORTS—	
Eyre's Peninsula District, 1920	158
Hills District, 1920	152
Lower Northern District, 1920	142
Lower Northern District, 1921	156
Mid-Northern District, 1920	134
Mid-Northern District, 1921	161
Murray Lands District, 1920	151
River Murray District, 1920	144
River Murray District	165
South-Eastern District, 1920	135

THE AGRICULTURAL BUREAU.—Particulars of this Organization, of which every farmer should be a member, can be had on application to the Department.

them have fallen, but Mr. Seekamp thinks that the first spraying should take place when 40 or 50 per cent. of the petals have fallen, and the second when 80 or 90 per cent. have been shed, and the third when the fruit has set. I am still of the opinion that the intervals between sprayings should be regulated by the appearance of the moth eggs. One grower told me he had found a grub inside a pear and no mark visible where it had entered, therefore it must have obtained admittance through the open calyx, and he thought the egg must have been laid in the calyx. But that does not follow, as a young grub hatched out on the leaves clustered around the pear might easily crawl in at the opening in the calyx. *Gathering the Fruit.*—Do not wait until some of the fruit is yellowing before picking, as that and the green fruit cannot mature in the sweats simultaneously, and you will either have to pick over the sweats or wait until the green fruit is ready, and by that time the coloring fruit that you put in will be rotten. Picking over the fruit leads to a lot of waste, because no matter how carefully one handles the pears they will bruise. Again, do not make the mistake of harvesting too soon, as you lose weight and do not receive such a good finished product. If you must pick early, select the best fruit, and by relieving the tree of some of its load you will get the benefit in increased size of the fruit left on the tree. It is a very good test of fitness for gathering when the pears break off when lifted upwards, bending the stalk where it joins the spur. Even though the fruit is green, that does not say that it cannot be damaged by careless handling. The picking bags should be lowered into the sweat and the fruit emptied with as little bumping as possible. The sweats should not be too full. When stacking them in the shed, cross them slightly—an inch or so—to allow air to get into the boxes. The pear shed should be well ventilated, an ideal structure being one with an iron roof and bamboo sides and ends. *Cutting.*—When ready for the knife, the pears are a beautiful golden yellow color, and the knife should pass through the fruit without any grating sound. If you do cut a hard one by mistake, drop it into the pig bucket, because the finished articles will only annoy you by its unsightliness in a pack of otherwise uniform fruit. If the pears are gathered when uniformly ripe, you should not have more than a dozen unfit to cut in each sweat. What may be termed the Johnstonian method of dealing with moth-infested pears is well worthy of a trial, and Mr. Seekamp means to try it this year. For those who did not hear Mr. Johnstone, perhaps I may state the method briefly. The moth-infested pears are cut and dried, and when the drying is completed they are taken up, bent over the finger, and with a sharp knife the core is sliced off by the markings, and it is claimed that this is much quicker and less wasteful. *Sulphur Houses.*—The old style sulphur house that has to be lifted over the trays should be relegated to the scrapheap. If you must have a movable house, have one with a detachable end resting on two jarrah rails twice the length of the house. Lift the closed end and insert a piece of 2in. piping wider than the house and resting on the rails; go to the open end, and lifting it up, push the house along, and the trays are left clear and ready for removal. To keep the sides rigid at the door end, nail a piece of wood across the top of the sulphur box and allow the wood to project 2ft. on either side, and from the ends of this piece nail stays to the sides three-quarters of the way down. Without question the built house has no rival, and is, one might almost say, everlasting, compared with the ruberoid-covered houses that require patching every year. With an extra truck and a sunken line you can load up the trays on the truck at once; if you have it under cover from the sun, wheel it along and push it into the sulphur-house. When they are finished, pull them on to the other truck, and move it to the end of the tramline, then wheel it out to the desired spot on the green and either spread or stack your trays. Thus the trays will only be handled twice, whereas with the older method four handlings will be required. If you use a truck, see that the wheels are well apart to prevent upsetting. *Sulphuring.*—The quantity of sulphur required varies with the quality of the fruit, and the kind of weather and the condition of the sulphur-house. The riper the fruit the less sulphur is required, and remember that a leaky house means a larger expense for sulphur. When the largest fruit has no hard core in the middle, then the house may be emptied, and usually two charges of sulphur are sufficient. Over-sulphuring tends to turn the skin brown and spoils the look of the fruit; 8lbs. sulphur, two charges, should treat 120 trays. *Drying.*—Lay the trays out in the sun for a day if there is no dust about, then stack them and allow the fruit to finish off. The day in the sun considerably shortens the time of drying, and as the latter part of the season is sometimes cold and damp, it saves evaporating and sometimes saves the fruit. Stack the trays 18 high, in rows running east and west, and also provide cover-trays to keep out rain. These, if made from 3ft. x 2ft. trays, with an extra board added, and covered with ruberoid, are perfect as a top protection. Leave a space between the ends of the stacks for convenience in handling, and also between the rows to allow plenty of air to get at the fruit. Side covers to keep off the sun are also needed, and these are useful to keep out dust and rain. *Grading.*—Grading can only be done well by hand, because no machine can discriminate between the various shades of color. If any of the largest pears are not quite dry, set them aside to finish off.''

BLOCK E, January 30th.—Colonel W. Dolman delivered an address, ''Dehydration of Fruit,'' and exhibited a number of samples of fruit from an evaporator plant at Lyndoch.

LONE GUM and MONASH, December 6th.—Forty-six members and two visitors attended the December meeting of the Branch, which took the form of a ''Question Box.'' Messrs. H. Taylor, H. Berriman, and W. Muspratt (Irrigation Instructor and Inspector) attended the gathering and replied to many questions submitted by the members.

NECESSARY FOR THE COUNTRY

"MONIER"

SEPTIC TANKS CONCRETE PIPES.

MADE IN A VARIETY OF SIZES.

FULL PARTICULARS FROM

S.A. REINFORCED CONCRETE Co.,

BOWMAN BUILDINGS. TEL., CENT. 2393.

A further meeting was held on January 10th, when Mr. L. A. Bills (manager of the Berri Branch of the National Bank) attended and delivered an address, "Bookkeeping as Applied to Block Work."

LONE GUM and MONASH, February 7th.—Mr. W. E. Muspratt (Irrigation Instructor and Inspector) attended the meeting and delivered an address, "Harvesting Operations," and replied to numerous questions.

MONARTO SOUTH, January 27th.—As usual, the first meeting in the new year was devoted to a discussion on the previous harvest. Members brought in samples of wheat to determine the average weight per bushel for the district. Twenty-seven samples were submitted, which ranged from 60lbs. to 66lbs. to the bushel, the average being 63½lbs.

POMPOOTA, January 10th.—Mr. F. Murray Jones, B.V.Sc., M.R.C.V.S. (Government Assistant Veterinary Surgeon), attended the meeting, and delivered an address, "Diseases of Dairy Cattle."

SOUTH AND HILLS DISTRICT.

CURRENCY CREEK.

December 6th.—Present: 14 members.

Poultry Breeding.—Mr. G. Crossman, who read a paper dealing with this subject, said he intended to confine his remarks chiefly to the White Leghorn breed of fowls because they were the best laying strain of poultry in South Australia at the present time. The paper then read as follows:—"Select the hens from the flock in September and October, because most of the birds are then in good feather, and you can judge many points better at that time of the year than you can in the autumn. It is important to maintain a proper succession of breeding stock and to show an improvement in the flock each year. To do this, carefully cull out all small birds and those with scaly legs, and do not breed from them. If you are going in for flock breeding have at least one cockerel to every 10 hens. Mate the birds early, in order to have the eggs ready to start hatching in August. Chickens hatched in August will start to lay at five to six months old. The White Leghorns will lay better if they are housed for the winter months and kept warm and dry, with plenty of clean drinking water and good food. The weight of eggs should be of interest to breeders. The 1922 national egg-laying test is now in progress at Bentley, Suffolk. The rules are that eggs weighing 2ozs. and over are classed first grade, 1⅞ozs. second grade, and those weighing under 1⅞ozs. are classed as under weight. In this standard weight of eggs 686 White Leghorns laid 13,111 first grade, 940 second grade, and 30 eggs under weight. *Fat Table Poultry.*—Table poultry are dear at the present time, and are likely to remain so for some time to come. Many farmers are in the habit of breeding crossbreds for table birds. Now that they have accepted the advice given to them to breed pure stock and not crossbreds there is always a market at a paying price. Breeders of pure stock can always sell the pick of their flock at good prices, and even the culls will bring as much, and often more, than the mongrels when sent to market."

CURRENCY CREEK.

February 26th.—Present: 11 members and eight visitors.

Homestead Meeting.—At the invitation of Mr. P. H. Kilsby, members inspected his herd of pedigreed Friesian cattle and Berkshire pigs. After a general tour of the farm, Mr. H. J. Apps (Assistant Dairy Expert) gave a demonstration of milk-testing and a lecture, "Points of the Dairy Cow."

HARTLEY (Average annual rainfall, 15in. to 16in.).

January 10th.—Present: 10 members and one visitor.

CARE OF THE FEET OF THE HORSE.—In the course of a paper dealing with this subject, Mr. N. Whellar said no matter how well the horse was fed and looked after, it was of little use if its feet were not sound. It was a bad practice to drive the horse until it cast a shoe and to continue until the foot was quite bare. Nothing pulled a horse down in condition more quickly than tender feet. In his opinion a horse should never have its shoes on more than six or seven weeks. The shoes should always be looked to before driving the horse, to see that no clenches were raised, and also to note if any of the shoes were loose. In preparing the foot for shoeing care should be exercised to see that no stubs of the clench were in the hoof. That was frequently the cause of bad feet. The clench should be cut off cleanly before the shoe was pulled off. When the shoe had been removed the loose and ragged part of the sole should be cut off, and the horn rasped down, but care should be taken not to rasp lower than the sole. A good plan to ascertain when enough had been cut away was by the pressure of the thumb on the sole, which should give slightly in all its breadth. It was important to make a good fit, so when the shoe was nailed on it would not be a case of making the foot fit the shoe. Much care was needed when nailing on the shoe. The first care should be to see that the shoe properly fitted and the nails driven in to a fair height. When clenching, care should be taken not to rasp the nail when giving it a bed. One should always file the nail straight across before turning it down. No clench should be left to project over the horn, because that practice was often the cause of brushing. In finishing off with the rasp the smith should never rasp above the nails; that was a bad practice, and should never have to be done over a well-fitted shoe.

METROPOLITAN ABATTOIRS, ADELAIDE.

MANUFACTURERS OF

MEAT MEAL FOR PIGS

Read Report of trials made by PROF. PERKINS, *Journal of Agriculture*, January and July, 1921.

MEAT MEAL
BONE MEAL
BONE GRIT
FOR POULTRY

For full information on above write to

The GENERAL MANAGER, Metropolitan Abattoirs Board, Box 578, G.P.O., Adelaide.

ALSO MANUFACTURED

BLOOD MANURE
BONE MANURE

Farm Poultry.—The following paper was read by Mr. H. Hooper:—"At the present time on the majority of farms the poultry breeding is a disgrace to our State. In the first instance, inbreeding is carried on to some extent, the result being small and inferior fowls. To my knowledge some hens are kept at least eight or nine years, instead of the stock being replaced every second year. A good policy is to change the cockerels every year. The housing of poultry is a necessity, especially when the nights are cold. In a good many cases there are no houses to be found, and you will see hens swinging about on the tops of trees. One cannot expect fowls treated in this way to lay eggs. Where straw is so plentiful a fowlhouse can be erected very cheaply. If tick should become a menace the house can be destroyed by fire. In the few instances where houses are found, some of them have not been cleaned out since they were erected, thus harboring vermin, scaly leg, and other diseases. The feeding is another point that must not be neglected. In a good many instances all the inferior feed is kept for the purpose of feeding poultry. This is a mistake. If the birds are fed on good wholesome grain there will be no waste and better results will be obtained. Water is another item that must not be neglected. The fowls should have troughs or tins, and be supplied with fresh water each day, care being taken to see that the drinking utensils are kept in the shade. If the water is allowed to get warm there will be trouble with the birds. I think if each farmer were to keep fewer poultry, but better, the retruns would be higher."

IRONBANK (Average annual rainfall, 33.34in.).

February 3rd.—Present: six members.

The Bird Pest.—The Hon. Secretary (Mr. H. E. Tucker) read the following paper:—"There are, from the fruitgrowers' point of view, two classes of well-known birds—fruiteaters and non-fruiteaters—and it would be as well to compare the chief varieties of each class. The main fruiteaters are silver eye, starling, goldfinch, greybird, blackbird, and parrots of all sorts. Non-fruiteaters—Robin, wagtail, fantail, wren, thrush, magpie, and kookaburra. It is interesting to note that all the fruiteaters mentioned above, with the exception of the blackbird, are flock birds; whereas the non-fruiteaters are pair birds, and it is this numerical superiority of the fruiteater that makes the birds as a whole the enemy of the fruitgrower and gardener. In any orchard one can find 50 silver eyes to one robin, which means 50 birds doing damage to one doing questionable good. Let us look first at the direct damage done. The fruit attacked includes strawberry, cherry, loquat, peach, apricot, plum, pear, fig, and apple; in fact, I think that oranges and lemons are the only varieties that are immune. It is not an easy matter to assess the actual loss caused to the grower, but I consider that 10 per cent. of the crop would be a fair estimate. If it were possible to ascertain the total value of the fruit output in the State annually, the loss to the grower and to the State on the above basis would make a most convincing case against the bird. It is their wasteful methods of eating fruit that make the damage so heavy. A flock of starlings in a bed of strawberries will go from berry to berry, only taking a bite out of each. The silver eye treats cherries and plums in the same manner. The parrot, however, destroys fruit out of sheer devilment. I have watched them pick off bunches of cherries and throw them on the ground, and as for apples, they will knock a dozen off the tree in order to get a bite out of one. It is obvious that by far the largest percentage of birds that infest orchards are destructive, and they should not be tolerated any more than the codlin moth, for I consider they do more damage than the moth. The difficulty is to find a suitable means of keeping the pest in check. There are three that suggest themselves to me, viz., mechanical scarers, the gun, and poison. Mechanical scarers are effective just so long as the birds are scared of them, the time they take to get used to them varying from five minutes to 24 hours. The gun is effective, but is also expensive, and it has the defect of being dangerous should anyone be walking through the orchard and be unaware that it is being used. Another point is that the shot do considerable damage to the trees. Poison seems to me to be the method that will be eventually adopted. I have heard that tins of poisoned water hung in the trees act fairly well. It would be a good plan if the Government offered a prize for the best solution of this problem; they would get the money back in the form of extra income tax that they would collect from the growers once the birds were destroyed. At the beginning of this paper reference was made to indirect damage and loss, and I refer to the distribution of seed, and one seed in particular, viz., the blackberry. It is the fruit-eating bird that is responsible for the rapid spread of this plant, which is gradually covering the best of the uncultivated land in the hills. The gardener has to be always on the alert, grubbing out the seedlings from under fruit-trees, along creek banks, and drains, for once well established it is almost impossible to eradicate them. Before concluding, I would like to say a word about the good that birds are supposed to do in eating insects, &c. Prominent local ornithologists tell us that certain birds will eat so many thousand insects in a given time. Maybe they do, but they do not eat enough, for if they did, there would be very little use for the spraypump. It is an absolute necessity for the fruitgrower and gardener to spray regularly against all sorts of parasites, and with suitable spray compounds any of them can be easily kept in check, and this entirely without the assistance of birds. I have tried to show that the bird, instead of being the friend of the gardener, as many would have us believe, is his deadly enemy, and if concerted action is not soon taken for its suppression, the loss caused by it, together with the excessive cost of implements, fruit-cases, sprays, manures, labor, &c., will make fruitgrowing on a commercial scale unprofitable.''

MILANG.

February 10th.—Present: 21 members and visitors.

The President (Mr. E. L. Williams) presided over an attendance of 21 members and a large number of visitors, including several visitors from the Strathalbyn Branch. Mr. S. Bottrill, of the Strathalbyn Branch, read a paper on ''Destruction of Noxious Weeds.'' Special reference was made to the spread of

COXS' SEEDS
MR. FARMER
SEND US YOUR ENQUIRIES FOR
SEED WHEAT
HUNTER RIVER LUCERNE
ESSEX RAPE
CAPE BARLEY
and all other Agricultural, Vegetable, and Flower Seeds.
We Sell Only the Highest Quality Seeds—Specially Selected and Graded.
E. B. COX & Co.,
SEED MERCHANTS,
Corner Rundle St. & East Terrace.

Experience Tells,
and Experienced Farmers Say, that
FORGAN'S CAST CHILLED
PLOW AND CULTIVATOR SHARES
ARE THE BEST THAT MONEY CAN BUY.——ANYWAY THEY HAVE THE BIGGEST SALE OF ANY MAKE IN AUSTRALASIA.
THIS PROVES THEM WORTHY OF A TRIAL.
J. & R. FORGAN,
Crystal Brook and Port Pirie.

noxious weeds in the district, the apathy shown by landholders, and the fact that many weeds that were now on the list of noxious weeds had very little or no detrimental effect on the land, while at the same time they were of value as a tonic to grazing stock. Mr. Bottrill also read a paper on "Destruction of Rabbits." Mr. J. F. E. Crawford, Strathalbyn, gave a "Talk on Insurance," in which he stated that insurance from a business standpoint was something that deserved the serious consideration of any person who was desirous of safeguarding himself against loss in any form, as well as making provision for those who were dependent on him in case of his death. Mr. F. W. Allison (Strathalbyn) spoke on "Bureaux and Their Powers," and said he felt that they did not fully realise their power in the land, as well as their responsibility. In many of the questions that were continually coming before them they should take a more active part, he having in view such a subject as the Murray Port League as one that should claim their attention, as well as others that would arise in the future. He felt sure that if the Bureau took such matters in hand it would in return have the consideration and probably the support of those in authority, and would reflect to the benefit of their various districts. Mr. Kruse, on behalf of the members of the Milang Branch, proposed a hearty vote of thanks to their Strathalbyn friends for their instructive evening. Mr. Pearce seconded, Mr. Matheson supporting them in their remarks. Supper was then distributed by the ladies.

SHOAL BAY.

January 30th.—Present: six members.

FENCING.—The following paper was contributed by Mr. O. B. Schaefer:—"For this district I recommend a six-wire fence to keep all stock under control. Posts should be from 5ft. 2in. to 5ft. 6in. in length to allow them to be placed from 20in. to 22in. into the ground. Strainers should be 12in. longer. In most cases fencing on a large scale should be erected in the summer or in dry weather. This will help to keep the posts firm in the ground, and allow the dirt to settle tightly around them at the commencement of the wet weather. I prefer boring the posts to using staples for holding the wires in position. Strainers should be well rammed and stayed. If white ants are troublesome the posts should be put into a small fire and charred. Where there is a plentiful supply of timber I advise a distance of 10ft. to 12ft. between the posts, and where iron droppers are used the posts should be placed from 10ft. to 24ft. apart. The distance between the wires should be 4½in. to 5in.; five plain wires with a barb on top a distance of 10in. to 12in. above the top plain wire being used. On Kangaroo Island I recommend galvanised wire."

ASHBOURNE, January 31st.—The meeting discussed the subject, "Destruction of Rabbits." Mr. R. H. Haines spoke in favor of fumigation with bisulphide of carbon. Mr. A. Cox considered poisoning to be the most efficient means of keeping the rabbits in check. Other members spoke, some in favor of traps and digging out the burrows, and a lively discussion took place as to the best method of ridding the land of the rabbit plague.

BALHANNAH, February 2nd.—Mr. L. S. Cowan, B.Sc. (agric.), member of the Advisory Board of Agriculture, visited the Branch and delivered an address, "Jersey Cattle," to an audience of 31 members and 10 visitors.

BLACKHEATH, January 31st.—Mr. E. H. Pym read an extract from the *Journal of Agriculture*, "Poisoning Foxes and Rabbits," and an interesting discussion ensued.

CYGNET RIVER, February 1st.—Mr. A. C. Osterstock read an article from the *Journal of Agriculture*, "Cotton Growing Experiments at Berri," and an interesting discussion followed.

MOUNT PLEASANT, February 6th.—It was decided that the members of the Mount Pleasant Branch of the Agricultural Bureau should stage a district exhibit of produce at the forthcoming Mount Pleasant Agricultural Show. Members each promised to do all in their power to make the exhibit a success.

SOUTH-EAST DISTRICT.

FRANCES (Average annual rainfall, 20.74in.).

January 27th.—Present: 10 members.

Best Type of Horse for Farm Work.—Mr. M. Montgomery read the following paper:—"Speaking from experience in the Frances district, I favor a heavy horse. If the farmer mates his best draught mare with a Clydesdale stallion, I think that cross will produce a horse with a good top, not too much hair, and one that will be the most useful horse for farm work. One often hears it stated, 'Hair and condition are all right in the show ring, but is of little good for the farm.' That may be all right from their point of view, but when seeding time comes round, the tails of horses have to be pulled, so why not trim the hair off their legs at the same time. Some farmers prefer breaking a colt when it is two years old; but I think this work should not be done until the animal is three years old, because the extra year will have given the colt a better chance to fill out and grow into a more useful horse. Before being attached to the team, it should be carefully handled, properly mounted, taught to lead and answer the rein. For a time half-days would be sufficient work for the colt, and it should not be expected to take its place against a horse accustomed to constant work. Special care should be taken to secure a perfect-fitting collar, and when this has been accomplished it should always be used on the colt. When unyoked, the shoulders of the animal should be washed with cold water, to guard against sores and

CATERPILLAR

TRACTORS.

Agery, September 9th, 1922.
Messrs. Vrai Limited, Torrensville.
Dear Sirs,

We have tested the T-35 "Caterpillar" here, and find we can plough 14¾ acres 3in, deep on hard soil, on a fuel consumption of 12galls. of kerosene and ½pint of petrol.

(Signed) H. CADD & SONS,
Per H. H. Cadd.

This test was run for a period of 5 hours 27 minutes on kerosene, and gave a result of 1s. 10d. per acre for fuel, oil, and grease.

THERE IS ONLY ONE "CATERPILLAR."
HOLT BUILDS IT.

There is a "Caterpillar" model for every job. May we send you particulars?
VRAI LIMITED, TORRENSVILLE, Sole Agents.

scalding. During seeding the horses should cease work at sun down, to enable the sweat to dry before morning. Always provide a good curry comb and brush in the stable, and see that the horses are regularly groomed.''

THE FARM TRACTOR VERSUS HORSES.—The following paper was read by Mr. J. C. Brown:—''In presenting this paper on the value of the tractor on the farm in preference to horses, I do not do so as an experienced motor power farmer; but I have come to the conclusion that motor power should be and will be the principal power used by the farmer for almost every kind of heavy work. I will take, for an illustration, the Binnum lands. Our lands and conditions have been much commented upon as being only suitable for one thing, viz., duck farming, and breeding frogs to feed them. I admit that in winter the land is not the best on which to work, or the sweetest or most comfortable on which to live. Nevertheless, I do contend that although these lands have drawbacks, they have their advantages. One good feature is the prevailing strong clay subsoil, condemned by the inexperienced as being cold, sour, &c., and of no use. But I differ. This clay subsoil is wonderfully fertile, and is a good feature of the land, for when cultivated it is sweetened, and grows a good coat of grass at once; and the more this land is cultivated, levelled, and cropped, the better and richer it becomes. The portions of land unimproved and uncultivated on each of our holdings is considerable, and in its present uncultivated state is worth about £3 10s. per acre for grazing only, owing to its sour and sparsely grassed state; but if it were cleared, cultivated, levelled, and cropped, it would be worth nearer £23 per acre for mixed farming. Some of the cultivated paddocks on the holdings have proved their carrying capabilities to be from three sheep to five sheep to the acre most of the year. The question then arises, 'Why, then, do we not cultivate a fresh piece of land every year, and so increase our income by carrying more and better stock?' The land, it is claimed, will grow anything, and almost everything—wheat, oats, barley, sorghum, kale, millet, and various other summer grasses, together with beautiful ornamental trees, shrubs, flowers, vegetables, and fruit. This is proof that this clay subsoil, which is intermixed with a limestone marl or gypsum, is rich with the fertilising qualities necessary for the growth of all these crops. If this is so, what are we waiting for? Personally, I would say the spirit is willing, but the power to work this land is weak. Like most farmers, I have from four to 12 good horses. It has always been a big problem to cultivate a new piece of 'crabholey' land every year, and we find that the horses are not altogether satisfactory to cope with the soft and boggy nature of the land when wet, and the hardness of the land when dry. The fact is that in normal conditions it takes six horses with a three-furrow plough, or eight horses with a four-furrow plough, to break up new ground to a depth of 4in. or 5in., and most of the year these horses are doing nothing, but still require to be stable fed. That they may not be in a weak condition when required for heavy work, it is necessary, in my case, to put in and take off feed for the horses. Eight horses will eat about a ton of chaff a week, which, at £3 per ton, is £12 a month. Most of us are making a living in a way we call mixed farming—that is, combining cereal growing with stock raising and wool growing. If the crop turns out a failure, we console ourselves by thankfully noting the lambs and wool coming along to pay our way. Actually we have only made money on the stock raising and wool, and because the grain did not yield very abundantly, we are somewhat consoled with 40 tons or 50 tons of hay off the land, which, instead of being fed to the sheep when they require it, will have to be devoured again by the horses by the end of the next harvest to put in and take off the crops. What I wish to point out is that combining cultivation with stock raising and wool growing is quite all right, and the correct thing to do; but our methods are not sufficiently developed. We are not getting the best or all we could get out of the land. We acknowledge that the sheep pay us well; yet we expend very little upon them. The trouble is, we do not make them the principal factor for our cultivating, or the cultivating the main factor for the sheep. Our drawback, in my opinion, is the need for a stronger and a less expensive power to cultivate the stiff clay land than the power derived from horses. This needed power has come along to encourage us to try again, viz., 45 B.H. power farm tractors, with a guaranteed pulling strength of equal to 12 or 15 good, staunch, powerful draught horses. These tractors are giants of strength, which can pull comfortably up to 11-furrow ploughs, either in hard, soft, or boggy ground. Twelve or 15 horses could not get near or pull that weight of ploughs through such land. The reason they can give satisfactory work on boggy, soft country is that the bearing surface of the tractor is about 4,000 sq. inches, and the pressure on the land is about 4lbs. to the square inch—considerably less than the feet of either man or horse. I will give an illustration, and take as an example for consideration 100 acres of new land in the Binnum district. That is not too much; every year should see farmers with 100 acres under crop, and 100 acres under fallow; but this cannot be done year in and year out with less than eight good draught horses. Now, to get at the best and most economical power to use on the farm—the motor tractor, or the eight-horse team. I will take the eight-horse team first. Eight good draught horses, with a four-furrow plough, will turn over six acres a day, taking 17 working days to plough 100 acres. Harrowing the 100 acres of ploughed land, twice over, with six-leaf harrows, 40 acres per day, taking five days. Grading and levelling the land with 10ft. wide grader, once over, 20 acres per day, taking five days. Cultivating with either disc, spring tooth, or scarifier cultivator, 15 acres per day, taking six and a half days. Seed drilling, 17-hoe implement, 20 acres per day, taking five days. Harvesting the 100 acres, without cartage, and using 8ft. reaper-thresher-harvester or reaper and binder, say, eight days, making a total of 47 days. Now for the cost and expense of this team of eight horses and equipment. The purchase of the team would be approximately £300. Feed for the horses, say, for nine months in the year, stable fed on chaff only at £3 per ton, and 4 tons per month, £108; three months feeding on grass at 1s. 6d. per week each, £6; interest on £300 for 12 months at 6 per cent., £18; total expense for 12 months, £132. I will now take the farm motor tractor on 100 acres of new ground. First, the tractor will not require a two-hours' feed and rest at midday; hence a saving of time, and if needed to make a quick finish of a paddock, it could work all night or a part of the night, owing to the tractor being fitted with bright electric lights. However, I will only consider the usual time of working, viz., from sunrise to sunset, and although the tractor has the strength to pull much larger implements, I will use the same implements as those for the eight horses, which would, in consequence, be easier for the tractor, and take less fuel. Ploughing 100 acres of new land with a four-furrow plough, nine acres per day, taking 11 days. For the double harrowing, I would have two harrows, one behind the other, the same width as the plough, attached to the plough. Grading the 100 acres at 25 acres per day, taking four days. Cultivating, scarifying, &c., 15 acres per day, taking seven days; drilling seed and super, 20 acres per day, taking five days; harvesting the 100 acres of crop, without carting, eight days—or a total of 35 days, against the eight-horse team of 47 days, being 12 days in favor of the tractor. A farm tractor will cost from £225 to £800; so, for the sake of illustration, we will take the average, and say the tractor costs £600. Fuel, crude kerosine, 360galls. to perform the same work of cultivating and harvesting the 100 acres, at a cost of 1s. 6d. per gallon, £27; lubricating oil, £4; interest on £600 for 12 months at 6 per cent., £36; total cost, £67. As shown, the whole of the cultivation and harvesting has taken 35 days to complete by the tractor, at a cost of £67. The horse team has taken 12 days longer than the tractor, at a cost of £132, and the team has proved £65 per annum more expensive than the tractor. Besides this, the tractor does all the work more quickly, and although this has not been considered, it is of considerable importance and value to the farmer both in cultivating and harvesting operations. In all my farming experience on Binnum, the best results have been from early sowing on a good seed bed of fallowed land, and I would say that with the quick work of the tractor, one would be enabled to finish seeding operations before the heavy rains had set in, thereby enabling the tractor and plough to get to work fallowing up another 100 acres of new land for the coming year. Immediately any work is completed, the tractor can pull itself into the shed, and the expense ceases. This is not so with the horses. The heavy hauling of logs together for clearing, pulling down trees and stumps, and all belt power work, threshing, shearing, chaffing, grinding, pumping water, sawing wood, etc., can be performed by the farm tractor. No other motor power need be kept on the farm. It is impossible to give the exact cost per acre with the tractor compared with the cost per acre with horses, because the less weight a tractor pulls the less fuel is used; and, again, all costs of a tractor or a horse team will depend on the length of time each equipment is used. Two most important items of expense in operating the tractor are wear and tear and cost of repairs. These items are greatly influenced by the care and type of man operating the tractor. I have not taken into consideration horse shoeing, breakages, or repairs to either equipment, nor wages and keep of a man. If the farmer needs help for either equipment, he can add on the costs to each, which would not make any material difference. I acknowledge the tractor is not yet perfect; but what make of engine is perfect? Every year we see an improvement, but I feel confident that the farm tractor will, before long, be seen working on the farm of every intelligent and energetic farmer. I know it will be hard for some farmers to cast aside their fine, big, expensive teams of horses, to which they have become so endeared. The old horseworks for driving chaffcutters, wood saws, &c., died hard, and so will the passing away of horse teams for heavy farm work.''

KONGORONG.

February 1st.—Present: seven members.

LUCERNE.—Mr. J. McNicol contributed a paper on this subject, which was read by Mr. W. Aslin. The paper read as follows:—''Lucerne is the best of all fodder plants. It can be used in a mixture with other grasses, but it is of most value when cut, either for green feed or hay. The crop favors a soil that is deep and loose, and, to ensure the best results, the soil should be either naturally very fertile or made so by cultivation and the application of manure. The land should be well and deeply cultivated, and where necessary manure should be added to the soil. Where the lucerne is cut and carted off the ground, topdressing with farmyard or artificial manure is necessary to maintain the vigour of the crop. The manure may be applied in autumn or in spring, immediately after the first cut, and worked into the soil. I prefer a spring sowing of 10lbs. to 15lbs. of seed to the acre for this district, because it gives the lucerne a chance to grow ahead of the summer weeds. For cutting and feeding the crop whilst it is green, the best plan is to cut one day and feed it out the next, because there is a danger of bloating the stock if it is fed to them directly after it has been cut. Where it is intended to feed off the crop, it is necessary to have the lucerne in small paddocks, so that it can be fed off quickly; if stock are kept on the crop for lengthy periods they will nip off the young shoots and check the growth of the plants. The best time to cut the hay is considered to be when about one-tenth of the crop is in flower, because the leaves do not fall off so readily at that stage of growth. Of course, where irrigation can be practised one would obtain three or four times the amount of feed that would be obtained during an ordinary summer from a non-irrigated crop.''

KALANGADOO, February 10th.—A discussion took place on several subjects of local interest. The advantages or otherwise of using high-grade super were also discussed.

NARACOORTE, November 11th.—The meeting was devoted to a discussion on items of general interest to the district. Nine members were present at a further meeting which was held on December 9th, when the Vice-Chairman (Mr. F. A. Holmes) gave a report of Farmers' Day at the Kybybolite Experimental Farm.

RENDELSHAM, December 3rd.—Mr. H. A. Stewart read an extract, ''Well Boring.'' Mr. Stewart also exhibited a small working model of a boring plant.

TATIARA, February 17th.—An interesting discussion took place on the subject, ''Tobacco Cultivation.'' Mr. Hutley called attention to the fact that flax grew luxuriantly in the vicinity of Bordertown, and promised at a convenient season to demonstrate to the members the possibility of converting it into linen yarn.